DOCUMENT RESUME

ED 106 066	95	SE 018 126

TITLE	Guide for Integrating Environmental Education Concepts into Elementary, Secondary, and Post-Secondary Vocational, Technical and Adult Education. Final Draft.
INSTITUTION	Moraine Park Board of Vocational, Technical, and Adult Education, Fond du Lac, Wis.
SPONS AGENCY	Office of Education (DHEW), Washington, D.C.; Wisconsin State Board of Vocational, Technical, and Adult Education, Madison.
PUB DATE	Jan 74
NOTE	493p.
EDRS PRICE	MF-$ 0.92 HC-$24.75 PLUS POSTAGE
DESCRIPTORS	Adult Education; Conservation Education; *Curriculum Guides; *Elementary Education; *Environmental Education; Instructional Materials; *Interdisciplinary Approach; Learning Activities; Natural Resources; Outdoor Education; *Secondary Education; Teaching Guides; Vocational Education

ABSTRACT

In addition to producing manpower for jobs in environmental fields, students and teachers in all vocational education areas need development of an awareness, understanding, appreciation, and commitment to action in preventing and solving ecological problems as citizens in their communities. This is a guide for integrating environmental education concepts into appropriate elementary, secondary, post-secondary, vocational-technical, and adult education programs using the United States Office of Education (USOE) cluster concept as a framework. The guide covers areas such as accounting, agriculture, automotives, carpentry, drafting, home economics, horticulture, management, nursing, and social studies. The guide is divided into sections according to these subject areas. Each subject area is identified by division or grade level, discipline, subject matter, category, and rationale. Instructional objectives, recommended learning activities, classroom instructional materials, reference materials, and additional learning experiences are included for every different topic within the subject area. Appendixes dealing with the program are also included. (TK)

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GUIDE FOR INTEGRATING
ENVIRONMENTAL EDUCATION CONCEPTS
INTO
ELEMENTARY, SECONDARY, & POST-SECONDARY
VOCATIONAL, TECHNICAL & ADULT EDUCATION

FINAL DRAFT JANUARY, 1974

MORAINE PARK BOARD OF VOCATIONAL, TECHNICAL AND ADULT EDUCATION
FOND DU LAC, WISCONSIN

WISCONSIN BOARD OF VOCATIONAL, TECHNICAL AND ADULT EDUCATION
MADISON, WISCONSIN

U.S. OFFICE OF EDUCATION
WASHINGTON, D.C.

SE 018 126

GUIDE FOR INTEGRATING ENVIRONMENTAL EDUCATION CONCEPTS INTO ELEMENTARY, HIGH SCHOOL AND POST-SECONDARY VOCATIONAL, TECHNICAL AND ADULT EDUCATION

Preliminary Draft August, 1973

Developed Through An Environmental Education Institute
June 11 - 29, 1973

Co-Sponsored by

U. S. Office of Education, Washington, D. C.

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Funded by the U. S. Office of Education, Vocational Education Amendment of 1968 administered through the State Board of Vocational, Technical and Adult Education, and Moraine Park Vocational, Technical and Adult Education District.

ACKNOWLEDGMENTS

This guide was developed through an Environmental Education Institute held at the University of Wisconsin Center - Fond du Lac June 11 - 29, 1973, under the supervision of the Moraine Park Board of Vocational, Technical and Adult Education. It was sponsored and financed jointly by the United States Office of Education and the Wisconsin Board of Vocational, Technical and Adult Education. We would like to express appreciation to the United States Office of Education, the State Board, and to Mr. Doyle E. Beyl and Mr. Roland J. Krogstad of the State Office staff for their complete cooperation, and to the institute participants for their knowledge and dedication toward the preparation of this guide. We would like, especially to thank Mr. Vernon O. Horne, Special Projects Specialist of Moraine Park Technical District and Dr. Eugene Beck of the University Center and their respective institutions for their devoted attention to the total administrative details associated with offering an institute of this type.

We also appreciate the many speakers for their forthright and informative presentations.

FOREWORD

The problem of our environmental deterioration is well stated by Dr. Edwin Rumpf, Director, Division of Vocational and Technical Education, USOE, in an article in the American Vocational Journal of May, 1971.

> "Man devotes much of his time and energy to survival within his environment. We are approaching a crucial period when it is questionable whether the environment can continue to sustain mankind.
>
> Our entire ecological system has been seriously impaired. Food, air, and water pollution have increased at an alarming rate, and if we are to survive it is imperative that we design, develop, and maintain new products and processes to cope with this emergency. We must implement the proper educational programs to develop an awaremess, understanding, and appreciation for correcting environmental deterioration. Our population has shifted from a largely rural to an urban setting within the last fifty years. This has not occured without adverse environmental effects. The urban traffic problem and disposal of residential and industrial wastes are chief among them."

PREFACE

This is a guide for integrating Environmental Education Concepts into appropriate elementary, secondary, post-secondary, vocational-technical, and adult education programs using the USOE cluster concept as a framework. Instructors should review this for implementation in their courses of study. Secondary and vocational-technical education can help provide the qualified manpower needed for the technological breakthroughs which will aid in the solution of problems of environmental deterioration. It is imperative that we in all levels of education move forward rapidly to seek in-depth knowledge of the skills demanded, the curriculums to be developed and new program changes which must be initiated to meet this challenge.

In addition to producing manpower for jobs in environmental fields, students and teachers in all vocational education areas need the development of an awareness, understanding, appreciation and commitment to action in preventing and solving ecological problems as citizens in their communities.

Staff inservice programs are needed. Integration of ecological concepts into the curriculum is needed. Other environmental concepts can very appropriately be integrated at elementary and secondary levels.

The vocational-technical curriculum can be related to environmental problems such as slum conditions, pollution of lakes, streams and rivers, industrial pollution, mineral resource depletion, unchecked technological development, and increasing sewage disposal problems.

Each area of the vocational curriculum has a potential role in environmental problem solving. Agriculture, automotive mechanics, home economics, the building trades, marine biology,and transportation as examples, offer possibilities which reflect concern for the environment.

Automotive mechanics could provide special training in air pollution control as related to vehicle use every where. It is generally accepted that the automobile is responsible for more than one-half of all air pollution. The relevance of this problem as it affects the lives of people is obvious, and would provide an appropriate input into the curriculum.

Electronics and the possible development of electric cars and their impact on automotive technology suggest another possibility.

Home economics courses can go beyond home management and related wage-earning skills to study the impact of the continued involvement of new chemicals through new products identified with this area of instruction. Materials and information which give the student an understanding of the multitude of products for home use and their relationship to man's life cycle should be incorporated into the home economics curriculum.

Natural resources and their use can profitably be studied in agricultural education. Problems related to the pollution of water, land, and air are of critical importance to farmers. Students in agricultural education should be involved in efforts which will help reduce the loss of agricultural soil, water, woodland, and wildlife resources.

The current vocational curriculum should provide environmental experiences to all students including the college bound as well as disadvantaged and minority groups. Several conditions would characterize a broad undertaking of this nature. For example:

-Students in the vocational program would become involved in local problems of environmental control and development. Both the faculty and students would be involved in practical experiences which integrate contributions of several interrelated disciplines in environmental affairs.

-Seminars and work-study groups would be arranged to help each student define the environmental issues of special concern for him.

-Curriculum planners would accept the responsibility for developing teaching materials for use in environmental education.

-Vocational educators would think in broad terms and utilize a multi-disciplinary approach to ecological problems.

-Vocational education funds would be earmarked in increased amounts to provide the materials and facilities for in-depth studies of environmental problems.

Although there are no simple answers to the environmental problems there are many things we can do. We must control our technology, and with time and research bring our environment once again into a steady and harmonious state.

This challenge dictates the need now and in the years to come, for a large increase in trained manpower. Newly tested and proved techniques will require many different types of skilled workers and technicians. These emerging environmental careers offer great hope for the minority members of the society, in that they lack the institutional rigidities of older occupations.

Most of our streams and water systems are being contaminated by pollution from various sources, including residual wastes from highly populated coastal and riverfront cities and communities. Continued concentration of the population and expansion of industrial enterprises have caused uncontaminated rural environments to suffer ecological deterioration.

Over one million tillable acres of North American land are destroyed each year by strip mining, roads, or buildings. The use of pesticides and herbicides continue to be questioned.

Parallel to these changes are those carried by seventy million motor vehicles which have dramatically altered our way of living and intensified the output and concentration of air pollutants. By comparison it is interesting to note that the number of miles of high-speed rapid-transit systems has remained almost unchanged in the last thirty years.

We scrap seven million automobiles each year, adding to the national junk pile. Noise pollution is becoming as oppressive as other forms of environmental pollution.

Annual usage of electricity for light and heat, normally higher during the winter months, has been further increased by the demand for production of electrical energy in the summer for air-conditioning. This change in our mode of living tends to further aggravate the pollution problem.

Summer and winter shortages are developing. The expansion of hydroelectric power facilities overflow our lowlands and causes changes in the land, plant and animal life. Nuclear generation of electrical power produces long-life radioactive waste materials and the thermal pollution of air and water.

Thus, a vicious cycle often develops in the attempt to meet our social demands while attempting to control pollution. Unfortunately, science and technology have not been sufficiently applied to open new sources of power, including wind, tide, solar and nuclear fusion.

This guide is conventiently indexed to facilitate reference of the various instructors to the appropriate section for the learning experiences desired.

Each section contains specific environmental concepts and a rationale for teaching each, the instructional objectives in cognitive, affective, or psychomotor domain, recommended learning activities, and the instructional materials to use.

TABLE OF CONTENTS

Page

Accounting 1

Agriculture - Agri-Business 21

Agricultural Economics 29

Agriculture - Farm Training 41

Production Agriculture 65

Agricultural Mechanics 73

Automotive 81

Basic Health 87

Biology - Animal 91

General 99

Carpentry - Cabinetmaking 115

Communications 121

Drafting - Architectural 139

Mechanical 143

Drafting and Design 147

Economics 151

Electricity and Electronics 169

Food Service Industry - Daily Living 175

Food Preparation 181

Food Technology 191

Home Economics - Child Care 195

Dietetics 199

Equipment and Appliances 201

Food and Nutrition 203

Home Economics - Food Preparation 205

Home Management 217

Page

Horticulture....................219
Interior Design....................227
Land Survey Technology....................241
Management....................249
Manufacturing....................255
Marketing....................267
Mathematics - General....................289
Technical....................293
Metal Fabrication....................297
Microbiology....................305
Nursing....................317
Supervisory Techniques....................333

Elementary, Junior High School, and Senior High School:

Chemistry....................343
Introduction to Ecology....................357
Science....................367
Social Science....................401
Social Studies....................421

APPENDICES:

Appendix A - Workshop Committee....................435
Appendix B - Administrative and Instructional Staff....................441
Appendix C - Resource Personnel....................445
Appendix D - Enrollment....................463
Appendix E - Daily Program....................471

Page

Appendix F - Concepts by Category 487

Appendix G - Progress Test 515

Appendix H - Staff Letter 522

Appendix I - Evaluative Critique 526

Appendix J - Student Comments 534

Appendix K - Wisconsin Vocational Districts 551

Appendix L - Brochure 555

ACCOUNTING

John Lay
Wm. K. Barribeau

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category: #1 - 29
Economic efficiency does not always result in conservation of a mutual resource.

Division Business Education

Discipline Accounting

Subject Matter Income Statement Preparation

Rationale:
As accountants, the students may someday be called up to make, or the making of, decisions which will affect short-term profits and long-range condition of natural resources.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Cognitive: a. Given a Trial Balance, the student will be able to prepare in correct written form an Income Statement with 80% of the accounts classified correctly according to generally accepted accounting principles. b. After working the assigned problem, the students will state during class discussion the need for environment related accounts and mention example where short-term economic efficiency does not always result in long-term efficiency. Affective: a. During class discussion the students will express concerns about the condition and/or the future of natural resources, such as: 1. How much damage has been done? 2. Can resources be replaced? 3. How much regulation is good?	Motivation: Emphasize to the students the importance and uses of income statements. a. Disclose net income b. Used by stockholders, IRS, creditors, management, etc. c. Legal sanction for mis-use of financial statements Development: a. The students will read the chapter on income statements in their texts. b. The teacher and students will discuss the chapter, with the instructor introducing and explaining the following environmental areas: 1. Sources and problems of land-fill. 2. The needs for zoning. 3. Why permits are required. c. The students will work the following problem after working similar problems: From the Trial Balance below, prepare an Income Statement -	1. Overhead projector 2. Screen 3. Transparencies 4. Chalkboard 5. Accounting Principles Textbook 6. 16mm projector

Reference Materials

Ideas for Additional Learning Experience

Publications:

Ivany, Environment: Readings for Teachers, Addison-Wesley Publishing Col, Reading, Mass.,1972

Audio-Visual:

Accounting transparencies by South-Western Publishing Company or Gregg Publishing Company

16mm film: Boomsville, 11 minutes, color animated, an overview of what man has done to his environment; growth of cities at random without zones, confusion, pollution. May be obtained from:

National Film Board of Canada
680 Fifth Avenue
New York, New York 10019

Community:

Possibly a speaker from the County Zoning Office.

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category:

Division Business Education

Discipline Accounting

Rationale:

Subject Matter Income Statement Preparation

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials

Jones Landscape Co.
Trial Balance
12/31/73

Cash	$ 2,500	
Supplies	200	
Equipment	50,000	
Investments	1,500	
Note Payable	5,000	
Harold H. Jones, Capital		$40,000
Professional fees		30,000
Sale of landfill		7,500
Salaries expense	16,000	
Zoning inspection ex.	300	
Permit expense	1,000	
Repair expense	200	
Gasoline expense	800	
	$77,500	$77,500

Evaluative:
Through correction and discussion of the assigned problem, the objectives will be checked to see if they have been met.

Reference Materials	Ideas for Additional Learning Experience
Publications: Ivony, Environment: Readings for Teachers Addison-Wesley Publishing Co., Reading, Massachusetts 1972 Audio-Visual: Accounting transparencies by South-Western Publishing Company or Gregg Publishing Company 16mm film: Boomsville (11 min) Color animated, an overview of what man has done to his environment, growth of cities at random without zones, confusion, pollution, May be obtained from: National Film Board of Canada 680 Fifth Avenue New York, New York 10019 Community: Possibly a speaker from the county zoning office.	

John Lay
Wm. K. Barribeau

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category: #2 - 49
Most resources are vulnerable to depletion in quantity, quality, or both.

Division Business Education
Discipline Accounting
Subject Matter Depletion

Rationale:
Accountants must know how to allocate the periodic costs due to depletion of natural resources and may some day be in a position to influence the reduction of this depletion.

Instructional Objectives Cognitive, Affective, Psychomotor

Cognitive

Given the costs of mineral rights, the estimated amount of natural resource available, and the amount of the resource consumed during the current year, the student will be able to compute the correct depletion rate and record the correct journal entry according to generally accepted accounting principles.

Affective

After working the assigned problem, the students will express concern about the depletion of Natural resources, such as:

1. How long before this resource is depleted?
2. What will be used to replace this resource when depleted?
3. Can we save or reduce the use of this resource?

Recommended Learning Activities Motivational, Developmental, Evaluative

Motivation

Students will view and discuss the film: THE GREATEST GOOD

Developmental

1. The students will read the unit on depletion in their texts.
2. The teacher and students will discuss the unit, with the instructor introducing the various depletable resources (oil, coal, copper, forests, etc.) and explaining the impacts on the company end the environment, such as:
   a. loss of resources for the company to work with
   b. loss of resources for other industries to work with
   c. loss of recreational areas
   d. impossibility of replacing many resources.
3. The students will work the following problem:

(cont.)

Classroom Instructional Materials

1. Overhead projector
2. 16 mm projector
3. Screen
4. Transparencies
5. Chalkboard
6. Accounting Principles Textbook

Reference Materials

Ideas for Additional Learning Experience

Publications:

Ivany: Environment: Reading for Teachers
Addison-Wesley Publishing Company
Reading, Mass. 1972

Skinner, B. F. - Walden Two, Macmillan Company
866 Third Ave.,
N. Y., N. Y. 10022

Audio-Visual:

Film - The Greatest Good, CMA, Color
28 minutes - Free

This film shows the need for cooperation between mining and conservation - Lowell Thomas, narrator.

Community:

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category: #2 - 49 (cont.)

Division Business Education

Discipline Accounting

Subject Matter Depletion

Rationale:

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
	Problem: Assume that the cost of certain mineral rights is $800,000 and the deposit is estimated at 2,000,000 tons of ore. If 180,000 tons are mined during the year, what is the depletion rate and what is the proper journal entry to record the depletion cost? Evaluation Through correction and discussion of the assigned problem, the objectives will be checked to see if they have been met.	

Reference Materials	Ideas for Additional Learning Experience
Publications: Audio-Visual: Community:	

John H. Lay
Wm. K. Barribeau

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Division Business Education
Discipline Accounting
Subject Matter Sales Tax

Category: #5 - 53
Natural resources affect and are affected by the material welfare of a culture and directly or indirectly by philosophy, religion, government and the arts.

Rationale:
The student should be aware that the government will help finance pollution abatement equipment through tax relief.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
COGNITIVE: 1. The student will be able to select from a given list of purchases the items that require payment of a sales tax and those that are exempt, and write a short explanation of the reason why certain items are exempt. 2. Given the related data the student will be able to write the correct journal entry to record sales taxes according to generally accepted accounting principles. AFFECTIVE: During class discussion of the solution of the assigned problem the student will express an opinion in favor of sales tax relief for the purchase of pollution abatement equipment.	MOTIVATION: Students will view and discuss the film: The River Must Live. The instructor will re-emphasize the importance of pollution abatement equipment and the advantage of not paying the sales tax on this equipment. DEVELOPMENTAL: 1. The student will read the chapter on sales taxes in his textbook. 2. The instructor and students will discuss the chapter, with the instructor explaining the nature of sales taxes and how relief can be given on the purchase of pollution abatement equipment. 3. The students will be given a list of 10 items, including pollution abatement equipment. From this list they will be asked to select those items upon which sales tax would be required if the items were purchased. The students will then be required to record the purchase of these items in proper journal form. They will then explain in writing why sales taxes were not required on the other items.	1. Chalkboard 2. Accounting Principles textbook 3. Overhead projector 4. Transparencies 5. Screen

Reference Materials	Ideas for Additional Learning Experience
Publications:	
Ivany, J. - Environment: Readings for Teachers Addison - Wesley Publishing Co., Reading, Mass. 1972	
Audio-Visual:	
Film: The River Must Live - 17 min. Color, 1967 Free from Shell Film Library 450 No. Meridian Street Indianapolis, Indiana	
Shows what happens when a river becomes overloaded by too much waste.	
Community:	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category:

Division Business Education

Discipline Accounting

Rationale:

Subject Matter Sales Tax

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
	EVALUATIVE: Through discussion of the solution to the original problem, the objectives will be checked to see if they have been met.	

Reference Materials	Ideas for Additional Learning Experience
Publications: Audio-Visual: Community:	

John Lay
Wm. K. Barribeau

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category: #8 - 43

Division Business Education
Discipline Accounting
Subject Matter Financial Statement

The more efficient use of some resources is the result of technical and marketing improvements.

Rationale:

Recycling of waste products may provide economic benefits as well as environmental benefits to business and society as a whole.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Cognitive	Motivation	1. Screen
Given 2 Income Statements, one involving direct waste disposal and the other involving recycling processes, the students will decide which method is best for the company and explain why in a written essay mentioning both economic and environmental factors.	1. Students will view and discuss film: "The Garbage Explosion" 2. Instructor will re-emphasize the importance of proper financial statement analysis, mentioning such factors as management decisions, investment potential, available credit, etc.	2. 16mm projector 3. Chalk board 4. Accounting Principles Textbook
Affective	Developmental	
During class discussion of the solutions to the assigned problem, the students will mention that in some cases environmental factors may be more important than economic factors.	1. The students will read the Chapter on Financial Statement Analysis in their text. 2. The instructor and students will discuss the chapter, with the instructor explaining the values of recycling. a. Possible economic benefits, such as revenues or cost elimination. b. Environmental benefits, such as preserving resources or eliminating wastes. c. The necessity for determining relative values.	

Reference Materials	Ideas for Additional Learning Experience
Publications: Ivany: ENVIRONMENT: READING FOR TEACHERS Addison - Wesley Publishing Co., Reading, Mass. 1972 Audio-Visual: Film: THE GARBAGE EXPLOSION, 16mm., color, 1970 ed. Produced & distributed by: Encyclopedia Britannica Education Corp. 425 North Michigan Avenue Chicago, Illinois 60611 This film shows the volume and variety of garbage produced annually and some of the methods being used to cope with it. Community:	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category: #8 - 43 (cont.)

Division Business Education

Discipline Accounting

Subject Matter Financial Statement Analysis

Rationale:

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
	3. The students will be given two income statements. One income statement will involve direct waste disposal. The other income statement will involve the costs and revenues of recycling wastes. The student will be asked to determine which set of circumstances would be best for the company and explain why, mentioning the economic and environmental factors. Evaluation Through discussion of the assigned problem, the objective will be check to see if they have been met.	

Reference Materials	Ideas for Additional Learning Experience
Publications:	
Audio-Visual:	
Community:	

Barribeau

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category: #12 - 45
Pollutants and contaminants are produced by natural and man-made processes.

Division Business Education

Discipline Accounting

Subject Matter Appropriations of Retained Earnings

Rationale:
Students should be aware the accountants may be called upon to give cost estimates concerning the adoption of either voluntary or governmental encouraged pollution abatement procedures.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Cognitive: Given the following problem: "A company has insured bonds of $200,000 to obtain funds to install a precipitator, the installation of which was orderd by the federal government. The bond indenture requires that the corporation appropriate $20,000 of retained earnings each year for the ten-year life of the bonds. What entry must be made to record this restriction of dividends?" The student will be able to properly record the necessary jounral entries according to generally accepted accounting principles. Affective: During class discussion of the solution to the assigned problem, the students will mention some reasons for pollution abatement procedures.	Motivational: Students will view and discuss the film: Pollution Is A Matter of Choice. Developmental: 1. The student will read the unit on appropriation of retained earnings in their textbook. 2. During a discussion students will determine the needs for pollution abatement procedures and government regulations dealing with the following: a. smoke stack precipitation b. water purification c. waste disposal d. noise control Evaluative: Through discussion of the assigned problem the objectives will be checked to see if they have been met.	Chalkboard 16mm projector Screen Textbook

Reference Materials	Ideas for Additional Learning Experience
Publications: IVANY - Environment: Readings for Teachers Addison-Wesley Publishing Co., Reading, MA 1972 Audio-Visual: Film: Pollution Is A Matter Of Choice (53 min.) NBC Production, 1970 Available from: Visual Aids Service University Extension Division University of Illinois Champaign, Illinois 61822 (Also available from the University of Wisconsin) Studies areas in the U.S. where our national desire for affluence and luxury conflict with our need to preserve our environment. Community:	

AGRICULTURE - AGRI-BUSINESS ECONOMICS

Len Edge
Clarence Grundahl

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category: #1 Man and His Environment
Concept #1 - Living things are interdependent with one another and their environment.

Division Agriculture
Discipline Food and Marketing
Subject Matter Poisonous Weeds

Rationale:
Consumption of poisonous weeds by livestock may result in death to livestock causing great economical loss. Therefore, poisonous weeds must be eliminated from the environment to avoid livestock and human poisoning.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
1. The student should be able to name at least 3 weeds that can cause death to livestock: e. g., a. Waterhemlock b. Niteshade 3. Larkspur 2. The student should be able to name chemicals that will control poisonous weeds: e. g., 2-4-D Amine (solutions) 2-4-D Ester solutions 3. The student should be able to name mechanical means of weed eradication.	Motivation: 1. The instructor will a. Show pictures of animals suffering from poisoning from various weeds b. Show plants or colored slides of poisonous plants which grow in the area. c. Class members will share in discussion their own experiences with animal poisoning by plants. 2. If possible, take field trip to show poisonous weeds. 3. Have local veterinarian address the group citing actual cases. Developmental: Classroom presentation explaining chemical and mechanical means of control. (Slides used in classroom). Evaluation: Utilizing a short quiz, the instructor will determine whether the objectives have been attained.	Colored slides of picture in "Crops and Soils"issue 12th edition of Successful Farming by Meredith Corp. Des Moines, Iowa p. 70. Chart on p.75

Reference Materials	Ideas for Additional Learning Experience
Publications: Weeds (a periodical) Weed Science Society of America St. Louis, Missouri Audio-Visual: Slides show weeds that are poisonous. Community:	Have an educational program that will help eliminate poisonous weeds in the community.

Carl Mueller
Robert Hemauer

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category: #2 - 49
Most resources are vulnerable to depletion in quantity and quality or both.

Division Agriculture
Discipline Agri-Business
Subject Matter Soils & Insecticides

Rationale:
Students should be aware that overuse of certain insecticides will result in a residue developing in the crop produced, making it unfit for human consumption to a point where the FDA will ban it from the market for further use.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
1. At the time of planting the student will apply to the soil only the amount of insecticide recommended by the manufacturer.	1. Having the field plots with various amounts of insecticide applied to demonstrate the effects, and having end products tested as to the safe amounts of residue.	1. Land areas for field trial plots.
		2. Application equipment: a. Planters b. Sprayers
2. The student will be able to name the specific equipment needed to apply the correct amount of insecticide to the soil.	2. Take field trips to local areas that indicate crop injury by an overuse of insecticide.	3. 16mm projector and screen.
3. The student will be able to calibrate the equipment needed to apply the correct amount of insecticide to the soil.	3. Given speed, distance of travel, and volume, develop a mathematical problem on calibration.	4. Slide film projector.
4. The student will be able to identify specific improper insecticide applications by the amount of chloratic symptoms of the plants' growth.	4. Demonstration on calibration by catching a volume of material from working equipment and measuring it for insecticide content.	5. Overheads.
		6. Closed T.V. Circuit.

Reference Materials	Ideas for Additional Learning Experience
Publications: Bulletin No. 12344 - "Toxicity of Vegetable Insecticides to Test Mammals and Bees" Bulletin No. A2051 - "Soybean Insects" Both may be secured from local County Extension Office. Ask county extension agent for updated information on insecticides and their uses.	Take local pictures - (slides) - demonstrating Do's and Don'ts in insecticide applications and their results.
Audio-Visual: Slide Set - "How to Calibrate Sprayers" published by Geigy Corporation. Slide Set - "Insecticides and Their Uses" by Geigy Corporation.	
Community:	

Carl Mueller
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VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Division Agriculture

Discipline Agri-Business

Subject Matter Soil Conservation Through Strip-Cropping

Category: #6 - 39
Long range planning for the use and allocation of natural and human resources is continually evolving.

Rationale:
Contour strip farming is a method used to conserve soil as a natural resource for future crop production.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
1. The student will be able to plant various crops on local land having a 25% slope hill to see which has more soil holding ability. a. Corn b. Oats c. Soybeans d. Alfalfa 2. The student will be able to use a rain gauge to record the amount of precipitation falling on the area in obj. #1. 3. The student will be able to design, construct and use a catch basin for recording the sediment run-off from each plot. 4. The student will be able to compare the sediment data obtained in obj. #3 to other published data.	Motivational: 1. Field trip to a local SCS farm to see strip-cropping and a soil collecting operation. Developmental: 1. Locate a piece of land in the local area having a 25% slope. 2. Plant this slope in strips at right angles to the direction of the crop. 3. Design and construct a catch basin for sediment measurements. Evaluation: 1. Hand in precipitation and soil sediment run-off data, plus a report of the students' conclusions.	Bus Tank Lumber and Sheet Metal Land Area Seeds Rain Gauge

Reference Materials

Publications:

P A 575 - Multiple-Purpose Watershed Projects
U. S. Department of Agriculture

AIB - 321 - Use The Land and Save The Soil
U. S. Department of Agriculture

Audio-Visual:

Film - Conserving Our Soil Today
BAVI
University of Wisconsin
Madison, Wisconsin

The film shows the various methods of soil conservation practices - strip cropping, grass waterways, etc.

Community:

Ideas for Additional Learning Experience

Buy or build a model which can be used to express soil loss due to the lack of conservation practices.

Clarence Grundahl
Len Edge

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category: #8 - The Environment is Everyone's Business
Concept #42 - Supply and demand in relation to values held by society, determines what is a resource and its economic value.

Agriculture
Division General Education
Agricultural Economics
Discipline Farm Training Program
Subject Matter Food Supply & Demand

Rationale:
We are at the intolerable point in communications. The consuming public resorts to boycotts of meat, the government imports meat, and the government exports feed grain, including soybeans. All of these are done without adequate concern and understanding of factors determining food prices.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
1. Bring interested parties together to discuss their problems related to the rationale: a. Farm organizations b. Farmers c. Consumers d. Economics (Economic instructors)	Motivational: Moderator or chairman of meeting will introduce the problem of need for communication on the subject of prices and will present the panel of speakers.	1. Price list of selected retail food prices 12 months ago, 6 months ago, and at present.
2. Panel discussion followed by open forum of: a. Meat price ceilings b. Food purchasing boycotts c. Food price roll back	He will indicate that topics of mutual concern are likely to be revealed by the panel and ensuing open forum which will show need for further discussion. He will encourage those present to identify these concerns and bring them out in the open forum.	2. Price list of farm supplies and farm products 12 months ago, 6 months ago, and at present.
3. Net result: To establish an agenda of topics to be discussed later, for example: a. Prices - supply and demand of perishable farm products b. Prices - Supply and demand of non-perishable farm products	Developmental: As the panel presentation is being planned the agriculture instructor and economics instructor will work together to: a. Circulate factual information on the issues to be discussed b. Choose speakers who can articulate their viewpoints with consumers and farmers c. As far as possible identify items of mutual concern (to public) which should be topics of future meetings. d. Before the first meeting enlist the interest of leaders among farmers and consumers on the issues to be presented and get their suggestions as to how a sense of mutuality might be developed at and through the meeting.	3. Details and summary of production costs of various farm products 12 months ago and at present. 4. Information on imports of meat, export of selected farm products and their relationship to national reserves and prices of farm livestock feed sup-

Reference Materials	Ideas for Additional Learning Experience
Publications: Wall Street Journal for Prices, and Imports and Exports Drovers Journal Consumer and Agricultural Index published by U. S. Department of Agriculture Audio-Visual: Visuals will be produced for slide or overhead projection as worked out between program leadership and panelists. Community: Representatives from the community will help organize, promote and serve as panelists in the meeting.	Subsequent meetings and class sessions will be held to clarify and elaborate on topics and issues which are of importance to the group.

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category:

Division: Agriculture
General Education

Discipline: Agricultural Economics
Farm Training Program

Rationale:

Subject Matter: Food Supply & Demand

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
	Evaluation: 1. Minimum acceptable performance will be getting at least three of the parties listed together to discuss the issues either privately or publicly. 2. Minimum acceptable performance would be a public meeting at which mutual concerns are shared. 3. Highly satisfactory performance would be the compilation of a list of topics for consideration at a future meeting which would prospectively contribute to further articulation and understanding of mutual concerns about food prices.	

Reference Materials	Ideas for Additional Learning Experience
Publications: Audio-Visual: Community:	

Len Edge
Clarence Grundahl

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Division Agriculture
General Education
Discipline Agricultural Economics
General Economics
Production Agriculture
Subject Matter Supply and Demand

Category: #8 Environment is everyone's business.

Concept #42
Supply and demand in relation to values by society determines the economic value of a resource.

Rationale:
The food producers must be able to obtain information relevant to predicting prices of supplies as well a prices of products. If this is not available the prices of food will be expensive in relation to their present cost and the basic food supply will be endangered.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Cognitive: 1. The student will be able to list sources of information that can be used as guidelines to determine the amount of food to produce - 1. Edible crops a. Canning industry (vegetables) b. Grains c. Meat d. Eggs	Motivational: The instructor will present data to indicate the amount of supply available in each type of commodity. a. Meat b. Vegetables c. Eggs d. Etc.	Charts Display of Supply Information Charts showing prices of various commodities.
	Developmental: The instructor will present supply data from Market Reports from USDA Publications Private Reports	USDA "Price Situation Washington, D. C." Grain Vegetables Milk Meat
2. The student will list food items that have fluctuated severely in the last six months. 3. State reasons for fluctuating. 4. The class will be able to project prices of certain commodities where the supply is stable and information available. The instructor will determine whether objectives have been attained.		Livestock Prices Livestock Meat Board Chicago, Illinois

Reference Materials	Ideas for Additional Learning Experience
Publications: U. S. D. A. Forecasts and Reports Milk Marketing Poultry and Egg Situation Crops Price Situation Audio-Visual: Overhead Transparencies Showing Price in Relation to Supply Made from Market Reports Community:	Students will keep a record of food prices as they affect their buying habits.

Len Edge
Clarence Grundahl

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Division: Agriculture, General Education
Discipline: Agricultural Economics, General Economics
Subject Matter: Production Agriculture, Farm Training Program, Supply and Demand

Category: #8 Environment is Everyone's Business.

Concept #42 Supply and demand, in relation to values held by society, determines what is a resource and its economic values.

Rationale:

Consumers are incensed at high retail food prices and they tend to blame farmers when they do not recognize the complexity of what makes high prices some of which are upward fluctuations in prices of supplies and poor production conditions (environment) beyond the control of farmers.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Cognitive: 1. The student should be able to list on a written test the variable environmental factors beyond the control of farmers which may adversely affect levels of farm crop production, e. g., a. Wet weather at time of planting and/or harvest b. Late spring frost and/or early fall frost	Motivational: (For non-agricultural classes an agricultural instructor will be invited to present the information.) 1. The instructor will present data to show fluctuations in weather conditions during the growing season for the last 5 years. He will point out the instances which actually interfered with the best crop production practices.	1. Charts and graphs showing variations in weather conditions during the growing season for recent years.
c. Drought d. Damaging wind, hail and/or rainstorms at critical **periods of crop growth**	2. The instructor will describe years of low and high production and indicate the specific combination of conditions which affected the level of production.	2. Charts and graphs showing relationships of selling prices of farm products to levels of production - regional and national basis.
e. Unusual disease and insect damage f. Excessively hot or cool season	3. The instructor will relate selling price of farm products to the level of production in selected years.	3. Pictures from books, magazines, education or supply houses, etc., showing field conditions and plant damage which contribute to poor yields.
2. The student shall list in writing causes of unusually high cost of milk and meat production, e. g., a. General increase in cost of feed supplies and farm equipment. b. Increase in cost of one or two critical items required for production.	Developmental: 1. The instructor will present the concepts of supply and demand and relate them to the production variables referred to under "objectives". 2. The instructor will describe and discuss with the students in class specific instances of supply and cost problems not otherwise presented.	

Reference Materials	Ideas for Additional Learning Experience
Publications:	
U. S. Weather Bureau Records	Students might be asked to bring newspaper clippings to class which refer to high prices of farm supplies, products, retail food, etc. for class discussion.
Wisconsin and U. S. Crop and Livestock Production Data Annual Wisconsin Agricultural Statistics Annual U. S. Department of Agriculture Statistics	
Wall Street Journal	
Audio-Visual:	
Overhead Transparencies (May be made from data in above listed publications.)	
Community:	
The class might take a field trip to see a field of corn, etc. adversely affected by any one of several weather factors.	
A farmer might be invited to visit the class to share experiences of extremes in weather and other production conditions.	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category:

Division Agriculture General Education

Discipline Agricultural Economics General Economics

Rationale:

Subject Matter Production Agriculture Farm Training Progra, Supply and Demand

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Cognitive (Continued) c. Imposition of new and costly production or quality standards. d. Others including increases in taxes, land values, transportation costs, labor costs, etc.	Evaluation: The student will take written tests to determine ability to list the factors called for in the instructional objectives.	

Reference Materials	Ideas for Additional Learning Experience
Publications:	
Audio-Visual:	
Community:	

Carl Mueller
Robert Hemauer

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category: #9 - 23

Multiple use is a practice in which a given land area functions in two or more compatible ways.

Division Agriculture

Discipline Agri Business

Subject Matter Plants for feed of domestic ~~animals and wildlife.~~

Rationale:

Students should be aware of the fact that forage crops which are produced for domestic animal feed, also act as a natural food for wildlife in order to provide for this in their normal farming practices.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
1. The student will name the forage crops which are eaten for food by domestic animals and wildlife.	1. Film "Food Cycle and Food Chain". This deals with the natural forage pertaining to wildlife requirement to sustain life. Deer were used as an example.	Projector Screen Bulletins
2. The student will list the domestic animals that eat these forage crops.	2. Lecture and discussion - wildlife thru soil and water conservation a. Fence row * b. Wind breaks * c. Grass waterways* *Pertaining to wildlife food and also cover	Magazine Bulletin boards
3. The student will list the wildlife animals that eat these forage crops.		
4. Given: Wildlife population, damage, and animal food requirement from the county agent, the student will calculate the amount of forage needed by wildlife.	3. Field trip to deer yard to see starvation and make a calculation how much forage is needed.	
	4. Display pictures of wildlife starvation. a. Magazine b. Newspaper articles	
	5. On a short quiz, the instructor will determine whether the objectives were attained.	

Reference Materials	Ideas for Additional Learning Experience
Publications: "More Wildlife Through Soil and Water Conservation" Bulletin No. 175, Soil Conservation Service Magazines: Successful Farming Conservation Bulletin Newspaper Milwaukee State Journal Badger Sportsman Audio-Visual: Film: "Food Cycle and Food Chain" BAVI - 1327 University Avenue, Madison, Wisconsin Community: County data on crop damage and animal count.	Discussion 1. Should the farmer be encouraged to provide more forage in order to provide more food for wildlife. 2. Should the farmer be subsidized for the crop damage caused by wild-life. 3. The student should calculate how much of the food for wildlife comes from the woodland and from the forage cropland.

AGRICULTURE-FARM TRAINING

PRODUCTION AGRICULTURE

Lowell F. Ahrens
Howard E. Jones

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category: #2 - Soil - Concept #14

Division Agriculture
Discipline Farm Training Program
Subject Matter Watersheds

Conflicts emerge between private land use rights and the maintenance of environmental quality for the general public.

Rationale:

In watershed development, conflicts and misunderstandings arise through better communication for all people involved. Many of the conflicts and misunderstandings can be kept to a minimum.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
1. The student will be able to tell how the watershed- recreational project will affect his farm by listing: (a) Changes in land conserving practices. (b) Changes in overall farm operations. (c) Changes in social behavior- example - manage a recreation area on his farm. 2. The student will be able to list at least 2 advantages and disadvantages of developing a watershed - recreational project for: (a) Involved farm (b) The community (c) The county 3. Organize an idealistic land and water ethic comparing personal (individual) rights and community (public) rights.	Motivational and Developmental By lecture: A watershed - recreational development is primarily achieved by a relatively few landowners whose conservation practices and structures benefit themselves, landowners downstream, and the general public who make use of the recreational facilities (be it park and/or lake) and the inherent flood control. By discussion: Do the few involved individual landowners have a responsibility to society to give up up private land rights for the wishes (public good?) of the general public and the betterment of environmental quality? Evaluation: 1. Verbal understanding of the objectives is sufficient. Students should be encouraged to consider and discuss on an informal basis, the pros and cons of this watershed-recreational project. 2. No formal written testing should be included with this concept.	1. U. S. Geologic Survey Maps of the area involved. Geological Department University of Wisconsin Madison, Wisconsin 53702 2. County Soil Survey S. C. S. Office County Court House

Reference Materials

Publications:

"Let's Grow! Community Benefits from Watershed Projects" (1970) AIB 337
"What is a Watershed" (1963) PA420
"Multiple Purpose Watershed Projects" (1970) PA 575
"Program for Rural Area Development" (1964) PA 610
"Small Watershed Projects - Local People Start Them -Local People Make Them Work" (1971) S.C.S.-CI 4

Audio-Visual:

From U. S. D. A.
Soil Conservation Service
P. O. Box 4248
Madison, Wisconsin 53711

Community:

Through: Meeting notices in local papers, encourage all people involved to attend and take an active role in watershed development.

Ideas for Additional Learning Experience

Resource speakers:

1. S. C. S. personnel
2. F. H. A. (Farmers Home Administration) representative.
3. Neighboring developed watershed directors.
4. County zoning administrator.
5. Department of Natural Resources area representative and staff.
6. County Resource Agent.

Len Edge
Clarence Grundahl

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category: #2 Soil
Concept #49

Division Agriculture
Discipline Farm Training and Production Agriculture
Subject Matter Soils and Fertilizer

Most resources are vulnerable to depletion in quantity, quality or both.

Rationale:
Malpractice field applications of organic and inorganic ferilizers leads to water pollution which kills fish, thus reducing a food source and interfering with streams and lakes for recreational purposes at a time when there is expanding need for recreational facilities. Note: Students are farmers.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
1. The student should be able to name orally at least 4 fertilizer malpractices which lead to water pollution, e. g. a. Application on frozen sloping fields. b. Surface application during early fall and winter near streams into which runoff drains. c. Fall and winter application on sandy soil. d. Excessively high rates of application at any time of the year. e. Using slopes for cropping which is too steep to resist soil erosion.	Motivational: Student will sample runoff water from fields that have been improperly fertilized according to practices already listed and will analyze the water for phosphorus and NO_3-N. Results will be compared with comparable data from properly fertilized fields. The instructor will explain why each of the malpractices results in water pollution. Students will compare phosphorus and NO_{3-N} content of water filtrate through 12 inch columns of fertilized sandy soil and fertilized clay loam soils.	Charts and graphs which illustrate effects of fertilizer practice on water content of NO_3-N and phosphorus.
2. The student should be able to explain orally desirable alternate fertilizer applications for 4 of the above mentioned practices.	Developmental: The instructor will discuss in class: 1. Basic principles which guide acceptable fertilizer application practices. 2. The recommended practices, emphasizing why and how they prevent water pollution.	
3. The student will discontinue malpractice fertilizer applications on property under his control as determined by farm visits of the instructor.	Evaluative: The students will perform the instructional objectives.	

Reference Materials	Ideas for Additional Learning Experience
Publications: Wisconsin Publications: A2057 Applying Anhydrous Ammonia and Ammonia Solution A1426 Better Crops and Income from Sandy Soils Audio-Visual: Community: Students can visit (individually or in groups) local projects of the Soil Conservation Service projects in which land capability classes have been clearly delineated.	

Howard Jones
Lowell Ahrens

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category: #2 Soil Concept #49

Most resources are vulnerable to depletion of quantity, quality, or both.

Division Agriculture

Discipline Farm Training Program

Subject Matter Soil

Rationale: Misuse of chemical fertilizers may reduce soil quality. Overuse of nitrogen fertilizers has resulted in illness and death in man and animals due to nitrate (NO_3) poisoning. With heavy rainfall, excess phosphorus and potassium will lead to runoff to streams and lakes and cause harmful algal blooms.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
1. Name chemical fertilizers which may lower soil quality if misused and the effect of misuse. 3 primary elements (a) N - Nitrogen (b) P - Phosphorus (c) K - Potassium 3 secondary elements: (a) S - Sulphur (b) Ca- Calcium (c) Mg- Magnesium 6 trace elements Zn - zinc, Cu - copper, Mn - manganese, Mo - molybdinum, B - boron, and Fe - iron	Motivational: Field trip to experimental crop plots. Film strip - "How good is your land." Developmental: Growing potted plants (crops) in the lab or greenhouse comparing normal, under, and over usage of fertilizer. Film strip - "Hunger Signs in Crops." Analyze tissue of plants on his farm to determine excess or shortage of elements.	1. Soil sampling probe. 2. Soil test kit. 3. Tissue analysis kit. N.A.S.C.O. Ft. Atkinson, Wis. 1. Film strip - "How Good is Your Land." 2. Film strip - "Hunger Signs in Crops."
2. Name (orally) acceptable levels (#per acre) of the primary and secondary elements (listed above).	Test soil on his farm for element availability in pounds per acre. Slide set: "Interpreting the I. B. M. Print Out of the Soil Test."	3. Slide set - "Interpreting the I.B.M.Soil Test Print Out B. A. V. I. U. of W. Madison, Wis. 53702 Projector and screen.
	Evaluative: 1. Observe correct procedure of the student in taking soil and tissue samples and making the tests. 2. Oral questions (a) What happens if you over use or under use fertilizer? (b) How do his soil and tissue tests compare to known optimum conditions?	See reverse side for additional reference material.

Reference Materials

Publications:

"The Soil Survey" A1902*
"Water Pollution and You" Peterson and Born 19N
  C678
"Ecology and You" C682 - 1972*
"Plants Link Soil and People" Cir. 375 - 1960*
"Let's Stop Soil Erosion" Cir. 613 - 1962*
"We Can All Help Save On Soil" Cir. 360 - 1945*
"Water - Woods - Wildlife" Cir. 417 - 1953*
  "Understanding Lakes and Lake Problems" G2411-1972*
"Sediment is Your Problem" S.C.S. USDA*
"Profitable Management of Wis.Soils" Walsh - 1971*
"Profitable Soil Management" Knuti,Hide,Korpi-1969
BULLETIN ROOM, College of Ag.,U.of W.,Madison 53702*

Audio-Visual:

Film Strip - "How Good is Your Land"
Film Strip - "Hunger Signs in Crops"
2"x2" Slides - "Hunger Signs in Crops"
16mm film "Problems of Conservation: Soil"
  1969 Color - 7600

Community:

Take an active part in local watershed development.

Ideas for Additional Learning Experience

Show the film, "Problems of Conservation: Soil" if time permits.

Use wall charts and graphs on fertilizers available from Successful Farming Magazine. Des Moines, Iowa

Attend commercial and University of Wisconsin Extension meetings on soils and fertilizers.

Clarence Grundahl
Len Edge

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category: #2 Soils

Concept 49 - Most resources are vulnerable to depletion in quantity and quality or both.

Division Agriculture

Discipline Farm Training Inst.

Subject Matter Soils & Fertilizer

Rationale:

Agricultural students should be aware of the fact that overuse of herbicides can be detrimental to soil, making the soil unproductive for certain crops.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
1. Student will be able to name, written or orally, three or more herbicides that remain in the soil from one year to the next. 1. Atrazine 2. Simazine 3. Primatrol 4. Diuron	1. Motivational Field trips to fields showing grain kill due to excessive herbicide application. a. Field trip to observe alfalfa damage.	1. North Central Weed Identification Manual. 2. Weed Control by Monsanto 3. Standard Oil Weed Manual
2. During the discussion the student will be able to identify the problems of growing food and feed crops containing excessive levels of herbicides including the following: 1. No small grain will grow where excessive levels of atrazine have been used. 2. Alfalfa will not grow following excessive use of atrazine.	2. Set up field, laboratory, or greenhouse demonstration plots showing effects of different rates per acre of herbicides. Also show damage to crop by "Nongrowth." 3. Report of detrimental use of herbicides from students. 4. A discussion will be conducted during which time the instructor will determine whether objectives have been met.	4. Research data 5. Films and Film Strips Geigy Company 6. Local examples of proper use 7. Overhead transparency showing data supporting proper use of herbicides and consequences of excessive use of herbicides.

Reference Materials

Publications:

Periodicals

1. Weeds, Weed Science Society
   St. Louis, Missouri
2. Herbicide Manual
   Monsanto, Agriculture Division
   St. Louis, Missouri 63166
3. Farm Chemicals for 1973
   Meister Publishing Company
   Willoughby, Ohio
4. Agri Fieldman, Feb. 73, 29 (2)
   Meister Publishing Company
   Willoughby, Ohio
5. Extension Bulletins #A2296
   Agri Bulletin Room
   University of Wisconsin
   Madison, Wisconsin

Community:

Ideas for Additional Learning Experience

Panel Discussion: Proper Use of Herbicides

1. Herbicide salesman
2. Farmer
3. High School Agri Inst. or Vo-Tech. Inst.
4. Feed store operator
5. Spray operator

Lowell Ahrens
Howard Jones

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Division Agriculture
Discipline Farm Training Program
Subject Matter Forestry and Wildlife Habitat

Category: #2 - #75
Soil productivity can be maintained by utilizing known agronomic, mechanical, and chemical processes.

Rationale: A landowner may be able to turn inefficient acres such as small odd-sized parcels of work land, unproductive woodlot and grazing land into profitable woodlot or pasture by changing cropping practices.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
1. The student will be able to change land use to make optimum use of: a. odd shaped pieces of work-land such as small triangular pieces resulting from contour stripping. b. poorly productive grazed woodlot. c. poorly productive open grazing land. 2. The student should be able to change agronomic practices by: a. planting walnut (if soil permits) or other trees on the productive but odd-size and small parcels of workland. (Multiple use-forest and wildlife management). b. fence off woodlot and keep cattle out (forest management). c. upgrade pasture by soil test and fertilization and proper stocking rate (pasture management).	Motivational: Field trip to an improved pasture and an improved timber stand. Film on "Forest Conservation" B.A.V.T. Developmental: Lecture: It is economically efficient and aesthetically sound to improve to best use the woodland pasture. It encourages and stimulates wildlife production by the improvement of habitat. It enhances aesthetic values by keeping woods natural and pasture domesticated. Evaluative: 1. How much return ($) can the farmer expect from his well managed wood lot? (Written estimate) 2. How many more pounds of meat or milk can be sold from his improved pasture? (Written estimate) 3. Verbal analysis of the environmental improvement he has accomplished.	Film: "Forest Conservation" BAVI Projector and Screen Bulletins listed on back page for reference or basic information Soil test probe, soil test kit - N.A.S.C.O. Fort Atkinson, Wisconsin Tree order forms from D.N.R. office

Reference Materials

Publications:

"Forestry Guidance for Wisconsin Landowners" (SC 146) G2096
"Growth of Wisconsin Coniferous Plants in Relation to Soils" R1948
"Controlling Brush, Stumps, and Small Trees with Chemicals" A1697
"Invite Birds to Your Home - Conservation Plantings for the Midwest" (1971) PA982
"What Is a Farm Conservation Plan" (1965) PA629*
"Autumn Olive for Wildlife and Other Conservation Uses" (1965) L458*
"Making Land Produce More Wildlife" (1969) FB2035*
"More Wildlife Through Soil and Water Conservation" (1963) AIB 175*

Audio-Visual:

"Managing the Family Forest" FB21876
"Planting Black Walnuts for Timber" LF487G
"Got a Forestry Problem - Extension Foresters Can Help" PA955G
"Timber Stand Improvement" PA901G
"Wildlife Production on Diverted Croplands" G2147
"Wildlife and Farm Fence Rows" G1531
"Water, Woods, Wildlife - Wisconsin" G141454
"Making Land Produce Useful Wildlife" FB2035G
"Wildlife - A Measure of Our Environment- How Extension Serves" PA965G
"Forest Conservation" Color - 20 minutes
BAVI - University Extension - Madison, Wisconsin 53702

Community:

Ideas for Additional Learning Experience

Take photographs of areas involved before, during, and after improvements.

Resource speakers that may be of help to a class:
1. University of Wisconsin Extension Forester
2. DNR Forester
3. S.C.S. Representative

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category:

Division Agriculture

Discipline Farm Training Program

Subject Matter Forestry and Wildlife Habitat

Rationale:

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials

Reference Materials	Ideas for Additional Learning Experience
Publications: "Learning to Know Common Wisconsin Trees" G1476 *U.S.D.A. Soil Conservation Service P.O. Box 4248 Madison, Wisconsin 53711 All other bulletins: Agriculture Bulletin Room College of Agriculture University of Wisconsin Madison, Wisconsin 53702 Audio-Visual: Community:	

Lowell Ahrens
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VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Division Agriculture

Discipline Farm Training Program

Subject Matter Animal Waste Management

Category: #3 Water Concept #44

Safe waste disposal, including the reduction of harmful and cumulative effects of various solids, liquids, gases, radioactive waste and heat, is important if the well being of man and the environment is to be preserved.

Rationale: Some lakes and streams are polluted today due to animal waste runoff. Farmsteads were often placed in close proximity to surface water to facilitate use of the spring or stream. Increased numbers of livestock in more confined areas require holding structures or ponds to prevent pollution(soluble& solid manure) of downstream waters.Farmers should be aware of these methods.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
1. Name two ways nutrients get into streams and lakes from farm feed lots. (a.) Leaching (soluble portion) (b.) Solids being washed into the watershed.	Motivational: 1. To make the student aware of stream problems (pollution by animal waste and sedimentation) show this film "Man and His Natural Environment - The Creek" 26 Min. Color	1. Aerial maps of students farm from county A.S.C.S. office.
2. Name 5 ways the above 2 processes can be minimized or eliminated. (a.) Daily, hauling of manure (b.) Stacking (c.) Manure pit (d.) Lagoon (e.) Hydraulic piston ("mole hill")	2. Slides showing proper and improper animal waste management practices taken in the area. 3. Field trip to area farms depicting manure pit, stacker, lagoon, and "mole hill" systems.	2. Soil Survey map from county S.C.S. office. 3. Projector and Screen. 4. Film "Man and His Environment - The Creek" BAVI Univ. Ext. U. of W. Madison, Wis. 53802
3. The student will make a cost comparison of the above mentioned (5) methods of animal waste management and order them according to cost.	Developmental: 1. Use A.S.C.S. aerial maps in conjunction with the county S.C.S. soil survey map to determine water flow and drainage pattern on his farm. 2. Class discussion on effectiveness and costs of each method of waste control. 3. Discuss voluntary methods of waste management as compared to D.N.R. animal waste guidelines.	5. Slides taken in area. 6. D.N.R. Proposed Animal Waste Guidelines County D.N.R. office
	Evaluation: 1. List sources of waste. 2. List ways in which wastes get into streams and lakes. 3. List each method in order of cost (highest to lowest)	

Reference Materials	Ideas for Additional Learning Experience
Publications: "Sediment is Your Problem" (AB174G)* "Economic Evaluation of Liquid Manure Disposal System for Dairy Cattle"(R2199)* "Manage Manure for Its Value" (A1672)* "Farm Animal - Waste Management" (NCXP206R)* Ag Bulletin Room U. of W. Madison, Wis. 53702 Farm Animal Waste Management Workshop Proceedings July 8, 1970 - Ag. Eng. Dept. U. of W. Madison, Wis. 53702 *From list of available publications.	Have county Soil Conservation Service representative speak to the class on related problems of soil and waste management.
Audio-Visual: 16mm film "Man and His Environment - The Creek" Film Library Midland Cooperatives 739 Johnson St., N. E. Minneapolis, Minn. 55413 Develop a set of 2 x 2 slides of local good and bad animal waste management practices.	
Community: Field trip to local farms to view and evaluate the different methods of handling animal wastes.	

Robert Hemauer
Carl Mueller

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Division Agriculture
Discipline Farm Training Program
Subject Matter Soil Water

Category: #3 - 66
Water is a usable and transient resource but the availability may be reduced or quality impaired.

Rationale:
Water quantity will be a critical natural resource and a costly item in agriculture production if conservation practices are not adopted.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
1. Given a supporting list in ways water is used on a farm, the student will determine his actual gallon usage of water in every day living.	1. Class discussion on following: a. Is water free b. Hydrologic water cycle c. Modern U.S. water demands on the future outlook	1. Hydrologic water cycle overhead. 2. Overhead projector.
2. The student will list five causes of water waste on his farm.	2. Show 35 mm slides that were developed by instructor of local area farmers depicting activities showing how water is being wasted. "Do's and Dont's"	3. 16mm projector. 4. Slide projector.
3. The student will repair all water faucets on his farm to eliminate any leakage.	3. Show 16mm film "Water in Biology"	
4. The student will set the timer right on his automatic bulk tank cooler so that in washing it an excessive amount of water will not be used.	Evaluative: 1. Student will develop a complete list indicating how he was able to reduce his daily water consumption. 2. Visit to student's farm, through observation to see if practices have been adopted to conserve water.	

Reference Materials	Ideas for Additional Learning Experience
Publications:	
Water and Its Uses, Samuel Matz Avi Publishing Company Westport, Connecticut	16mm film - 6689 - "Water in Biology" (21 min.) Color - Shows that water is the largest single constituent of living things. Shows plants and animals need water.
The Cost of Clean Water U.S. Department of Interior Superintendent of Documents Washington, D.C.	B. A. V. I. 1327 University Avenue Madison, Wisconsin
	16mm film - 3394 - "Water" (9 min.) Shows water is necessary to all life B.A.V.I. Address same as above.
Audio-Visual:	
Instructor is to develop an overhead illustrating the "Hydrologic Cycle".	
Instructor is to develop a series of slides depicting farmers' activities illustrating water waste.	
Community:	

Carl Mueller
Robert Hemauer

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category: #6 - 11
Resource Deletion can be solved by the development and adoption of alternatives.

Division Agriculture
Discipline Farm Training Program
Subject Matter Power & Mechanics

Rationale:
Electric energy is so essential to the future of humanity that one must adapt practices to conserve its use. Each farmer must conserve electricity in his farming operation.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
1. The student will turn off barn cleaner immediately after the gutter is clean. 2. The student will not use heat lamps when young animals are older than two days. 3. Student will install timing devices to automatically turn off lights during the day. 4. Student will use proper wattage bulbs. 5. The student will calculate and record directly electric power in watts and the monetary cost consumed by over use of electric heater.	1. Illustrate by problem: Using a 200 watt bulb where a 100 watt bulb would suffice. Amps X Volts = Watts ÷ 1000 Kwh. Determine Kwh used over 10 hrs. of operation of a 100 watt bulb vs a 200 watt bulb. Other problems in motors being used -- over size. 2. Having each student keep a record of his electric bill for the next 6 mo. Using conserving practices a. Turning off lights b. Not leaving electric devices run in excess c. Using proper size equipment How much will be saved in dollars on his light bill compared to the previous 6 months? 3. Lecture on "How Hard Electricity Works for You". 4. Class discussion relating the fact, "Total power consumed is greater than their needs or that which is essential. Evaluation: 1. Visit individual farms to see if conserving practices are being used. 2. Check light bills as to cost savings.	Various sizes of bulbs. Various sizes of heat lamps.

Reference Materials	Ideas for Additional Learning Experience
Publications: "Environment Cost of Electric Power" Scientest Institute for Public Information 30 E. 68th. Street New York, New York 10021 Audio-Visual: 2505 - Electricity "Wires in Your Home" Explains what happens when a switch is turned on. B. A. V. I 1327 University Avenue Madison, Wisconsin Community: Personnel from local power utilities.	

Carl A. Mueller

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category: #8 - 85

Division Agriculture

Discipline Farm Training Program

Subject Matter Farm Management

Rationale:
Farmers must use their knowledge to protect his environment for future generations, by not polluting.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Affective: 1. The student will develop and utilize a crop rotation system on his farm that will not allow excess waste to run-off the land.	1. Field trip to area farms that are using proper rotations. a. Strip cropping Discussion - 1. How established 2. Why it conserves b. Contours c. Waterways	1. Screen
2. The student will dispose of animal waste in a manner that will not contaminate surrounding land areas by using methods approved by D. N. R.	2. Field trip to different waste disposal systems in operation. a. Liquid b. Lagoons c. Stacking d. Mole-hill e. Digestive Tanks Discussion on each 1. How it conserves 2. How it prevents pollution 3. Why it works	2. 16mm Projector
3. The student using sprays will use the amounts prescribed by the manufacturer - lbs., pts., qts., etc., per unit area.	3. Demonstration plot illustrating where production per acre was the only incentive in growing a crop ignoring methods.	3. Slide Projector
4. The student will dispose of excess spray materials as prescribed by the manufacturer.	4. Slide set. Patz Mfg. Co. -showing various disposal systems.	4. Bus for Transportation.

Reference Materials	Ideas for Additional Learning Experience
Publications: Bulletin No. A1672 - "Managing Manure for its Value" * Bulletin No. - NC X P 102R - "Opportunities for Young Farmers" * *Secured from County Extension Office- your county	16mm film "Pollution" color 22 min. from B.A.V.I. University Extension, University of Wisconsin, Madison. The film considers solid waste management and various management alternatives. Emphasizes expense and technical challenges in eliminating air and water pollution.
Audio-Visual: Slide Set - From Patz Manufacturing Co. Pound, WI	
Community: Demonstration Plot - on a student's farm- illustrating excessive amounts of pesticides and herbicides used - to illustrate the objective.	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category:

Division Agriculture

Discipline Farm Training Program

Rationale:

Subject Matter Farm Management

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
	Evaluation: 1. On the farm visits to observe if objectives are met. 2. Farm tour to observe students if the farmers are using proper practices.	

Reference Materials	Ideas for Additional Learning Experience
Publications:	
Audio-Visual:	
Community:	

Len Edge
Clarence Grundahl

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Division Agriculture
Discipline Production Agriculture Agri-Business
Subject Matter Farm Training (if modified to verbal responses) Soils

Category: #2 - #71

Soil is classified as a renewable resource, but, because it may take a few years to thousands of years to be "renewed", it is more practically termed a depletable resource.

Rationale: From mismanagement soil can be lost forever by erosion. However, the application of recommended conservation practices can preserve the soil indefinitely. Farmers must practice soil conserving practices to maintain and improve the economic value of land used for food production, otherwise food as an essential for man's livelihood will become critically short in supply.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
The student will be able to identify in a written test at least three measures used by farmers to maintain the economic value of agricultural land for food production. Acceptable performance will include a brief statement in writing explaining the relationship between soil erosion and the relative value of land for crop production at the present as well as in the next fifty years.	Motivational: 1. The instructor will show in class a slide set, filmstrip or film on soil conservation practices as a means of maintaining soil productivity and, thus, its economic value as a natural resource, espcially for food production. 2. The instructor will explain that land as an economic essential for food production can be destroyed or greatly reduced in quality by negligent management, the effects of which may not be corrected for generations, if at all. Developmental: The local Soil Conservation Service leader or an agriculture instructor will be asked to speak to the class on the economic importance of soil conservation practices to the farmer as well as to the public at large. He will be asked to describe and explain briefly the soil conserving practices which farmers can use to maintain the economic value of agricultural land for food production. Under the direction of the Soil Conservation Service representative or an agriculture instrucotr the class might see actual erosion problems of soil on	

Reference Materials	Ideas for Additional Learning Experience
Publications: "Surface Drainage" by George J. Kriz, Crops and Soils, March, 1972, page 8. Buckman J. Brady - Nature and Property of Soils Seventh Edition Macmillan Company, pp.222-240. 1969 Audio-Visual: Colored slides on soil conserving and erosion control practices: 1. Purchased from NASCO, Fort Atkinson, WI 2. Prepared by instructor Community:	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category:

Division Agriculture
Production Agriculture
Discipline Agri-Business
Farm Training (if modified to verba
Subject Matter responses)
Soils

Rationale:

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
	Developmental (Continued) a farm and listen to an explanation of the economics of soil loss in terms of land usage as afflicted thereby. Evaluative: The student will be able to perform the instructional objectives as stated.	

Reference Materials	Ideas for Additional Learning Experience
Publications:	
Audio-Visual:	
Community:	

Len Edge
Clarence Grundahl

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category: #2 - Soil

Division Agriculture & Agri-Business

Discipline Farm Training Program
~~Producation Ag. Program~~
Farm Management Program

Subject Matter Soil Erosion

Concept #71 - Soil is classified as a renewable resource but, because it may take a few years to thousands of years to be "renewed," it is more practically termed a depletable resource.

Rationale: Soil loss from water erosion on poorly managed farm land can be so extensive as to render it useless for crop production or greatly reduce its productivity within a few years. Unless erosion is effectively controlled, food production can become insufficient for our national needs.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Cognative: The student will be able to idenify by oral description, from photographs or in ocular field inspection, fields with excessive soil loss from water erosion.	Motivational I: The class will take a field trip to see: 1. Examples of moderate, severe and very severe water sheet erosion. 2. New and old very advanced gullies eroded into formerly productive fields.	
The student will be able to describe orally the alternative management practices for controlling soil loss from fields having at least 5 different soil and slope characteristics.	Motivational II: The class will take a field trip to see and study water erosion prevention and corrective measures prescribed by the soil conservation service.	
The student will put into practice the soil erosion control practices identified in this study as determined by the instructor in farm calls.	Developmental: The instructor will describe the principles by which water erosion takes place and the actual tonnage of soil lost per acre of land under different soil and water circumstances. A representative of the soil conservation service will discuss the water erosion problem on the "Fieldtrip" Farm and describe what was done and why it was done. The instructor will discuss in the classroom the cost of the erosion control practices seen on the field trip. He will point out the loss in income due to initial poor management under all conditions referred to in the instructional	

Reference Materials	Ideas for Additional Learning Experience
Publications:	
Book - Soil Conservation by Bennett	
Bulletins - Publications on Water Erosion and Its Control Published by U. W. Extension Bulletin Room Madison, Wisconsin	
and U. S. Government Printing Office Washington, D. C.	
Periodicals: Soil Conservation (Each issue has articles on the subject)	
Audio-Visual:	
Community:	
Field trips as referred to under objectives.	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category:

Division Agriculture & Agri-Business ~~Farm Training Program~~

Discipline Production Ag. Program ~~Farm Management Program~~

Rationale:

Subject Matter Soil Erosion

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
	Developmental (Continued) objectives. In addition, the instructor will describe management practices which will prevent and control excessive soil loss under at least 5 different soil and slope characteristics Evaluative: The student will accomplish the educational objectives.	

Reference Materials	Ideas for Additional Learning Experience
Publications:	
Audio-Visual:	
Community:	

AGRICULTURAL MECHANICS

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Paul C. Rameker
Category: # 8 - #43
The more efficient use of some resources is the result of technical and marketing improvements.

Division Trade and Industry
Discipline Agricultural Mechanics
Subject Matter Engines

Rationale:
The student should be aware that the use of an automatic advance mechanism on diesel fuel injection pumps will result in a diesel engine's more efficient use of fuels, thus increasing fuel economy.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
1. The student will identify the differences between automatic advance equipped fuel injection pumps and pumps not so equipped.	Demonstration: Using an engine without an automatic advance pump and measuring its total fuel consumption over varied loading. Repeat demonstration using same engine now equipped with an auto advance pump.	Fuel injection pumps a. Automatic advance b. Without automatic advance
2. The student will state the results of late pump timing when starting a diesel engine.	Lecture using slides showing both samples of pumps.	Slides and Movie
3. The student will state the results of early pump timing when diesel engine is delivering full or rated power.	Movie: "Fuel Injection Pumps" Evaluation will be on observed results of the demonstration.	Projector Screen Diesel Engine Testing Equipment

Reference Materials	Ideas for Additional Learning Experience
Publications:	
Audio-Visual: John Deere: FOSM - Slides John Deere: Movie Roosa Master - Movie on Fuel Injection Pumps	
Community:	

Paul C. Rameker

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Division Trade and Industry

Discipline Agricultural Mechanics

Subject Matter Engines

Category: #8 - #88

Man is developing the technical and sociological knowledge needed to control population growth, modify environments, and alter resource use patterns.

Rationale:

The student should be aware that proper and complete adjustment of a fuel injection system will reduce air pollution as well as result in more efficient use of fossil fuels thus increasing fuel economy.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
1. The student will identify all of the potential trouble areas in a fuel injection system.	Lecture and discussion using slides. Identify trouble areas and discuss remedies of the problems.	Slide project. Screen. Movie projector. Injection Tester.
2. The student will trouble shoot and locate a malfunctioning area in a fuel injection system (using necessary equipment to detect the malfunction.)	Movie: "Fuel Injection Trouble Shooting" Show use of proper equipment for testing and analyzing the problems. Determine the best method of repair.	Pressure gauges. Vacuum Gauges. Manometer. Flow rater. Dynamometer. Self hand repair tools.
3. The student will correct the malfunction.	Briefly discuss proper repair. (Student has already been thoroughly grounded withthe repair of each individual component in the system.)	Diesel engine.
4. The student will recheck the complete system with appropriate equipment. Must meet the manufacturer's specifications.	Results of rechecking of complete system will be the evaluation of the complete fuel system exercise. Manufacturer's specifications will be available to the student.	

Reference Materials	Ideas for Additional Learning Experience
Publications: Audio-Visual: Slides from Cummins and John Deere Movie: John Deere or International Harvester Community:	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Paul C. Rameker

Category: #12 - 45

Pollutants and contaminants are produced by natural and man-made processes.

Division Trade and Industry

Discipline Agricultural Mechanics

Subject Matter Engines

Rationale:

The student should be aware that a reduction of air pollution by diesel engines can be accomplished by proper repair and adjustment of the nozzles in a fuel injection system.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
1. The student will identify the various components of a nozzle or injector. 2. The student will identify faulty nozzles as well as properly functioning nozzles working in an engine. 3. The faulty nozzles will be tested and correctly repaired and adjusted by the student. 4. The student will make a final test on the repaired nozzle prior to its reinstallation into the engine.	Demonstration: Using emission analizer and showing exhaust of an engine with a faulty nozzle. Replace faulty nozzle and again check exhaust showing decrease in emissions. Film - "Diesel Fuel System" Slides: Removal and Repair of Injectors and Nozzles. Lecture and discussion utilizing slides as well as actual nozzles. Evaluation: Of 1 and 2 will be on student's ability to determine which nozzles are faulty in an engine. Evaluation of 3 and 4 will be with the use of an emission analizer checking levels of exhaust emission prior to repair and adjustment and again immediately after the nozzles are repaired, adjusted and reinstalled in the engine.	Screen Slide Projector Slides Nozzles Nozzle Tester Diesel Engine Diesel Fuel Set of Hand Tools Emission Analizer

Reference Materials	Ideas for Additional Learning Experience
Publications: John Deere F. O. S. M. Various Equipment Manufacturers or Engine Manufacturers Service Manuals Audio-Visual: "Diesel Fuel System" Cummins Community:	

AUTOMOTIVE

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category: #1 - #45
Pollutants and contaminants are produced by natural and man-made processes.

Division Trade and Industry
Discipline Automotive
Subject Matter Emission Control Systems

Rationale: Federal regulations require 1975 automobile emissions of carbon monoxide must be reduced by 90% from 1970 levels, and by 1976 emissions of oxides of nitrogen must be 90% below average levels of uncontrolled 1971 vehicles. Students must know the function and operation of emission control systems with respect to the enforcement of emission standards along with customer satisfaction.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
1. Students will be able to: a. identify various components relating to the function, maintenance, and operation of emission control devices which directly reduce automobile pollution. b. tune-up an automobile so that it will meet federal emission regulations. c. adjust those automobile models which precede EPA requirements to reduce pollution yield.	Motivational: Modern automobiles are difficult to tune due to emission control systems and Federal regulations. Students must know the function and operation of emission control systems to be able to tune an engine to pass Federal regulations and obtain maximum customer satisfaction. Developmental: 1. Function, operation, and adjustment of emission control systems. a. Lecture on the following: 1. P.C.V. (routing fresh air to crankcase) 2. C.C.S. (essentials of combustion) 3. E.E.C. (fuel vapor) 4. T.C.S. (ignition system) 5. A.I.R. (mixing fresh air with exhaust) 2. Discussion and summary of lecture. b. Federal emission standards vs customer satisfaction. Evaluative: Teacher be prepared to conduct test to determine if instructional objectives have been met. Tune-up on automobile to meet Federal emission regulations.	Teacher prepared handout material developed from reference material listed.

Reference Materials	Ideas for Additional Learning Experience
Publications: "Automotive Emission Controls" by William H. Crouse (McGraw) Chevrolet Chassis Service Manuel (1970-71) Section 6T Audio-Visual: Laboratory Activity: 1. Inspection, servicing, testing, and operation of emission control systems. 2. Tune-up automobile to manufacturer's specifications. Community:	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category: #1 - 45
Pollutants and contaminants are produced by natural and man-made processes.

Division Trade and Industry
Discipline Automotive
Subject Matter Emission Control Systems

Rationale: The automobile is a man-made product which has had a great effect on contributing to air pollution. Federal laws require industry to clean up the internal combustion engline by emission control devices. It is important for the student to know that industry has utilized several methods to decrease automobile pollution.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
1. The student will be able to list the more common types of emission control systems found in the modern automobile.	Motivational: Emission control systems greatly effect the performance of the internal combustion engine. Fuel consumption and engine performance are sacrificed for a cleaner environment. How are we able to cope with this mechanical monster? Developmental: 1. Emission control systems A. Lecture and discussion on the following: 1. Brief history and development of emission control systems. B. Types of emission control systems - hand out material. 1. Positive crankcase ventilation 2. Controlled combustion system 3. Evaporation emission control 4. Transmission control spark 5. Air injector reactor 2. Summary of lecture A. Cleaner environment vs engine economy and performance Evaluative: Administer an objective test to determine if student can meet informational goals.	Teacher prepared handout material developed from reference material listed.

Reference Materials	Ideas for Additional Learning Experience
Publications: "Automotive Emission Controls" - William H. Crouse (McGraw-Hill) Chevrolet Chassis Service Manual (1970-71) Section 6T	
Audio-Visual: Laboratory activity: 1. Identification and inspection of various types of emission control devices.	
Community: Field trip to full service garage, automotive assembly or manufacturing plant.	

BASIC HEALTH

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

D. Vicki Bigley
Category: #3 - 64

Division Health Occupations
Discipline Basic Health Science (Core Curriculum)
Subject Matter Circulatory System

Water supplies, both in quantity and quality are important to all levels of living.

Rationale: High nitrate levels in drinking water are known to result in methemoglobinemia, an abnormal blood dyscrasia primarily affecting infants and are often fatal. Methemoglobinemia is a public health problem which has environmental implications.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
1. The learner will be able to identify the role of the nitrogen cycle as it relates to increased nitrate levels in our natural waters.	Motivational: Have class secure statistics on the number of "crib deaths" in a given time period known to have been caused by methemoglobinemia.	Transparency of hemoglobin molecule.
2. The learner will be able to suggest "X" number of causes of high nitrate levels in our water and food supplies.	Developmental: 1. Instructor will use diagram of normal hemoglobin molecule to indicate normal gas exchange, binding of nitrates, and the effect of excessive nitrate concentration on the hemoglobin molecule.	
3. The learner will be able to suggest ways of reducing the nitrate levels in our food and water supplies to safe levels.	2. Discussion of causes of high nitrate levels in our private and public waters indicating the U.S. government limit of 45ppm.	
4. The learner will be able to explain how excessive intake of nitrates can affect the hemoglobin molecule.	Evaluation: The instructor will assess the objectives on a short quiz.	

Reference Materials	Ideas for Additional Learning Experience
Publications:	Students may wish to investigate other environmental problems resulting in public health hazards i. e., "Plumbism," mercury poisoning, Cadmium and Beryllium poisoning, "Asbestos disease".
Audio-Visual: Instructor prepared transparency of hemoglobin molecule.	
Community:	

BIOLOGY-ANIMAL
GENERAL

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Allen Barkoff
Category: #1-1
Living things are interdependent with one another and their environment.

Division General Studies
Discipline Animal Biology
Subject Matter Respiration and Photosynthesis

Rationale:
It is important for the student to be aware that one important example of this interdependence of living organisms upon one another is that animals are directly dependent upon plants for their oxygen and plants utilize the carbon dioxide produced by animals.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Cognitive: 1. In outline form the student should be able to name the chemicals produced by plants which are needed by animals and the chemicals produced by animals which are utilized by plants incorporating the following equations into the statement. $6CO_2 + 6H_2O \xrightarrow[\text{chlorophyll}]{\text{sunlight}} C_6H_{12}O_6 + 6O_2$ $C_6H_{12}O_6 + 6O_2 \longrightarrow 6CO_2 + 6H_2O$	Motivational: 1. The student should observe a balanced aquarium periodically for one week prior to the introduction of this concept looking for changes in the kinds and numbers of plants and animals. 2. Propose the following problem in class. A spaceship occupied by 4 astronauts is about to undertake a 1 year space journey. Water, food, and waste products are limiting factors. How could this problem be solved i. e. what kind of equipment, organisms, etc. would be needed?	Balanced aquarium. Gas Manometer Available from Turtox Biological Supply House Chicago, Illinois. Small animals - snails work well. Green plant material. Light source with heat filters since temperature fluctuations affect the accuracy of the gas manometer.
2. The student should be able to diagram the major components of a food chain including at least 3 examples of a producer, primary consumer, secondary consumer, and decomposers.	Developmental: Lecture 1. Basic concepts of photosynthesis and respiration. 2. Discussion of food chains and webs.	
3. Psychomotor: In the laboratory the student should be able to determine the rate of O_2 production by a green plant and the rate of CO_2 production by a small animal. This can be done using a gas manometer.	Lab Instruction in the use of a gas manometer to determine O_2 production by plants and CO_2 production by a small animal. Evaluative: On an essay examination the student should obtain a score of 70% (see Cognitive instructional objectives 1 & 2).	

Reference Materials	Ideas for Additional Learning Experience
Publications:	In a balanced aquarium make O_2 and CO_2 determinations of the water. Vary the types and numbers of plants and animals making subsequent O_2 and CO_2 measurements.
Any good biology text.	A water test kit is available from: Turtox Biological Supply House Chicago, Illinois
Audio-Visual:	
Community:	

Category:

Division General Studies

Discipline Animal Biology

Rationale:

Subject Matter Respiration and Photosynthesis

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
	Evaluative (Continued) In a paragraph of about 75 words the student should describe the materials needed for an extended space journey with a limited capacity for food and water storage. In the lab the student should determine the rate of O_2 production of a plant and CO_2 production of an animal.	

Reference Materials	Ideas for Additional Learning Experience
Publications:	
Audio-Visual:	
Community:	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Allen Barkoff

Category: #1 - 7 Man has the ability to manipulate and change the environment.

Division General Studies

Discipline Biology

Subject Matter Natural Selection

Rationale:
The all too frequent misuse of chemotherapy and and antibiotics has created a serious medical problem through the introduction of resistent strains of bacteria. Twenty years ago an injection of 600,000 units of penicillin effectively treated gonorrhea while today the amount has been increased to 4.8 million units.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Cognitive: The student will be able to define on a written exam the term antibiotic. List 2 antibiotics and give an example of 2 organisms for which they are not effective. Explain orally what is meant by drug resistance mentioning genetic variability, differential reproduction, and mutation. Psychomotor: In the laboratory the student should be able to isolate a terramycin resistant mutant from a previously terramycin sensitive strain of bacteria. Affective: Before the end of the semester at least 5% of the class will have questioned their doctors about the desirability of their receiving an antibiotic as treatment for an illness.	Motivational: 1. Guest lecturer from local hospital discussing some typical problems being encountered in hospitals including a discussion of the problem of resistant strains of staphlococcus and other pathogens. 2. Perform lab on Bacterial Mutation in "selected exercises from Microbes in Action." Developmental: Lecture - Discussion 1. Definition of antibiotic 2. Discussion of drug resistance including a. Mutation b. Genetic variation c. Differential reproduction 3. Listing of organisms for which antibiotics are not effective Evaluative: In an objective essay, oral exam the student will meet the instructional objectives as stated.	Materials as listed in Seeley and Demark (See other side)

Reference Materials	Ideas for Additional Learning Experience
Publications: Microbiology by Pelczar and Reed, Savaders and Company Selected Exercises From Microbes in Action, Seeley and Demark, 2nd. Edition W. H. Freeman Company San Francisco, 1973 Environmental Aspects of the Hospital Vol. 1, Infection Control U. S. Department of Health, Education & Welfare Public Health Service, Rockville, Md. 20852 Audio-Visual: Community: Doctor or nurse from local hospital.	

Allen Barkoff
Don Morzenti

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category: # 1 - 7
Man has the ability to manipulate and change the environment.

Division General Studies
Discipline General Biology, Zoology Microbiology, Parisitology, etc.
Subject Matter Phylum Platyhelminthes

Rationale:
Man's activities are contributing to the spread of schistosomiasis which is considered by some to be the world's worst disease affecting between 120-250 million people

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Cognitive	Motivational	1. Film - See back
1. The student will be able to name 3 geographic areas in which the parasitic disease schistosomias is found.	Film - PARASITIC FLATWORMS Guest Lecture - Public Health Dept.	2. Overhead transparency of the schistosome life cycle.
2. Given pictures of the 4 stages of the blood fluke put them into the correct order of their life cycle.	Developmental Lecture: 1. Listing and characterization of areas where schistosomiasis is endemic.	3. Prepared slide of the schistosome.
3. Describe the manner in which the blood fluke affects the human body in terms of organ damage naming at least two organs.	2. Explain the life cycle of schistosome. 3. Discussion of transmission, symptoms, and cure of the disease.	(2 & 3 are available from Turtox Biological Supply House in Chicago)
4. Explain how the construction of the Aswan dam contributed to spread of this disease mentioning the snail and irrigation canals.	4. Discussion of the ecological repercussions of the constructing of the Aswan dam. Lab: Demonstration of the blood fluke on a prepared slide.	
5. In the laboratory place the pointer of the microscope on the schistome in a prepared slide.	Evaluation Given the seven stages in the life cycle of the blood liver fluke in random order, place them in the correct order with at least 90% accuracy. cont. →	Write a paragraph of about 50 words stating how the construction of the Aswan dam affected the spread of schistosomiasis.

Reference Materials	Ideas for Additional Learning Experience
Publications: General Zoology, by Hickman, Mosby & Co. Luvertebrate Zoology, by L. Hyman Audio-Visual: 1. Parasite Flatworms Encyclopedia Britannica Corp. Chicago, Ill. 2. Overhead transparency of the schistosome available from Turtox Community: Local Public Health Dept.	

Allen Barkoff
Don Morzenti

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category: #1 - 45 Pollutants and contaminants are produced by natural and man-made processes.

Division General Studies

Discipline General Biology, Anatomy and Physiology, Zoology

Subject Matter Excretion

Rationale:

Wastes of man and domesticated animals contribute to the eutrofication of lakes to the extent that the quantity of game fish has been reduced or made virtually non-existant in many lakes. This would be a great loss to the many fishermen whose leisure time is spent fishing and to the resort areas whose economy depends upon fishermen.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Cognitive 1. Be able to describe in writing the processes involving the breakdown of excretory products listing at least four steps of the nitrogen and phosphorus cycles. 2. Trace two chemicals released from the organic material thru the ecosystem naming at least three areas such as lakes and rivers where these chemicals might be found. 3. In writing the student should be able to list 4 segments of the economy (e.g. restaurants, sports equipment, etc.) where fishermen would have an impact.	Motivational 1. Field trip (or slides) to a body of water exemplifying eutrofication and/or a trip to waste treatment facility. 2. Analyze water sample for nitrates and phosphates above and below sewage treatment plant. 3. Film - Aging of Lakes Developmental 1. Discussion of the nitrogen, phosphorus, and hydrologic cycle to bring out how these chemicals are distributed thru-out the ecosystem. 2. Discuss the impact of the fishing industry upon the economy of Wisconsin. Developmental and Motivational Select one step at random in each process, eliminate it from the cycle and discuss the consequences. Evaluative On a written examination the student should describe how the nitrogen and phosphorus cycles contribute to the eutrofication and list four steps in each process. Explain the above exam and how the hydrologic cycle distributes nitrogen and phosphorus in the ecosystem. Also, the student should be able to relate the effect upon the local economy of the deterioration in water quality.	Water Test Kit Turtox 8200 S. Hoyne Chicago, Illinois 60620

Reference Materials	Ideas for Additional Learning Experience
Publications: Limnological Methods by P. Welch, 1948 McGraw-Hill Book Co., Inc. New York Freshwater Lakes and Streams by R. Corker Audio-Visual: Film - Aging of Lakes Encyclopedia Britannica Chicago, Illinois Slides - Wards Scientific Supply Community: Sewage Treatment Plant in Madison - Raymond Road Lake Wingra - Madison	

Category:

Division General Studies

Discipline General Biology, Anatomy and Physiology, Zoology

Subject Matter Excretion

Rationale:

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
	Given an unknown water sample and a water test kit the student should be able to test for nitrogen and phosphorus. (See objective 3)	

Reference Materials	Ideas for Additional Learning Experience
Publications:	
Audio-Visual:	
Community:	

Allen Barkoff
Don Morzenti

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category: #1 - 45 Pollutants and contaminants are produced by natural and man-made processes.

Division General Studies

Discipline General Biology, Anatomy and Physiology

Subject Matter Respiratory System

Rationale:
Emphysema death rates have significantly increased as air pollution has increased.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Cognitive 1) In writing the student will be able to describe the natural air cleansing mechanism or the human respiratory tract naming the cough mechanism, mucous, and the cilia escalator mechanism. 2) List and describe in writing three respiratory diseases and the specific air pollutants associated with these disorders. 3) Given slides of healthy and diseased lung tissue be able to distinguish between them. Affective 4) During the course of the semester at least 10% of the smokers will have quit smoking. 5) During the course of the semester at least 10% of the class will have objected to someone smoking in their presence.	Motivational 1. Dissection demonstration of lung tissue from laboratory rats raised in clean air and polluted air. 2. Demonstration of human freeze dried lung tissue demonstrating healthy and diseased tissue. Developmental Lecture 1. Describe the structure and function of the structures of the respiratory system with emphasis on the air cleansing mechanism. 2. Discussion of symptoms and etiology of carbon monoxide poisoning, emphysema, and research studies regarding air pollution and respiratory diseases (National Wildlife Federation) Lab Demonstration of slides of diseased and healthy lung tissue. Evaluative The student will be able to show 75% mastery on a multiple choice, matching examination covering the stated cognitive and psychomotor instructional objectives.	6 rats Air pollution chambers available from Ward's Scientific. Prepared human microscope slides demonstrating healthy and diseased lung tissue, available from Turtox in Chicago.

Reference Materials	Ideas for Additional Learning Experience
Publications: Ehrlich, *Population, Resources, and Environment*, Freeman and Company San Francisco, California National Wildlife Federation Publication (Environmental Quotient Index, 1971) Audio-Visual: Community:	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Allen Barkoff

Category: #4 - 10

There are certain risks taken, and limitations experienced when manipulating the natural environment.

Division General Studies

Discipline General Biology

Subject Matter Health & Disease

Rationale:

A recognized health authority has argued that superfluous medical radiation exposure today may be causing between 3,500 and 36,000 unnecessary deaths annually in the United States.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Cognitive: 1. On a written examination the student should be able to classify the effects created by nuclear explosions including blast effects, fire effects, direct radiation, and radioactive fallout.	Motivational: 1. Display a photograph or slide of the mushroom cloud produced by a nuclear explosion. Ask the student what biological problems have been created by such explosions.	Photograph of mushroom cloud produced by nuclear explosion. Geiger-Muller tube available from:
2. The student should be able to list in a written exam several harmful effects of radiation including damage to cell nuclei causing shorter life spans, sterility, decreased fertility, cancers (bone and leukemia), and harmful mutations.	Motivational-Developmental: Lab 2. Demonstrate how to use a Geiger-Muller tube. Have the students use the tube to measure the radiation present in a piece of filter paper. Place the filter paper in the intake tube of a vacuum cleaner for 20 minutes. Again measure the radiation. An appreciable difference should be observed due to background radiation.	Turtox Biological Supply House, Chicago, Illinois
3. On a written exam the student should be able to list 10 natural and man-made sources of radiation including cosmic radiation, materials in earth, building materials, diagnostic X-Rays, radioisotopes, television, atomic energy in industry, radioactive fallout, etc.	3. Have the students measure fallout itself by collecting 500 ml. of rain or snow in a catch basin. Evaporate to 2 ml. Transfer to a planchet, using a little distilled water to wash any residue from planchet. Evaporate to dryness under a heat lamp and make a radiation count. Note the difference in the count measured at different times.	

Reference Materials	Ideas for Additional Learning Experience
Publications: Weinberg and Kalish, Biology - An Inquiry Into The Nature of Life - Allyn and Bacon, Inc., 1971 Ivany, Environment: Readings for Teachers - Addison-Wesley Co., 1972, pp. 151-171 Pamphlets: Teaching with Radioisotopes and Laboratory Experiments with Radioisotopes Available from: U. S. Atomic Energy Commission Ehrlich and Ehrlich, Population Resources and Environment, W. H. Freeman & Co.,1972, pp.171-174. Audio-Visual: Community:	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category:

Division General Studies

Discipline General Biology

Subject Matter Health & Disease

Rationale:

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Psychomotor: 4. In the laboratory, the student should be able to use a Geiger-Muller tube to measure the radiation from various sources such as filter paper, rainwater, luminous watch dial, etc. Affective: 5. During the course of the semester at least 5% of the students exposed to X-rays will have questioned their doctors or technicians as to the safety of the equipment and the necessity of the exposure and will provide evidence of this in a report at the end of the semester.	Developmental: Lecture 1. Discussion of the physical and biological effects of nuclear explosions. 2. Discussion of the natural and man-made sources of radiation. Evaluative: 1. In a combination multiple-choice essay exam the student should be able to achieve a score of at least 70% when tested for the attainment of cognitive objectives 1, 2 and 3. 2. In the laboratory the student should be able to determine the amount of radioactivity in a known sample within a 10% margin of error.	

Reference Materials	Ideas for Additional Learning Experience
Publications: Audio-Visual: Community:	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Allen Barkoff
Category: #10 - 63

Division General Education
Discipline General Biology
Subject Matter Evolution

Succession is the gradual and continuous replacement of one kind of plant or animal complex by another and is characterized by gradual changes in species composition.

Rationale:
Environments change throughout time even without human intervention. However, man has the potential for disrupting natural successions. Students should be aware of what some of these potentials are.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Cognitive: 1. The student will be able to describe two types of succession listing the intermediate stages from the pioneer stage to the climax. 2. On a written examination the student will be able to list three animals which would be at a good adaptive advantage in each of the above stages. 3. In writing the student will be able to indicate three examples of habitats which have changed throughout geologic time without man's intervention. 4. In writing the student will be able to list and describe three ways in which man has disrupted natural successions including road building, damming rivers, and filling in marshes for landfill sites.	Motivational: 1. Field trip to local arboretum to observe the general kinds of plants while walking through the area. 2. Make daily observations of pond water taken locally to observe changes in the numbers and types of organisms. 3. Expose sterile nutrient agar plate to air, make daily observations and record the kinds of plants which grow. Developmental: 1. A lecture will be given explaining the succession of plants and animals found in walking from a lake to a marsh, to a deciduous forest in southern Wisconsin and relate this to natural processes. 2. Discussion of environmental changes throughout geologic time. 3. Discuss several ways in which man has disrupted natural successions such as damming rivers, building roads, etc. Evaluation: In a written examination the student will put into correct order all the stages found in a pond succession. Do the same for a prairie succession.	Pond water. Sterile nutrient agar plate.

Reference Materials	Ideas for Additional Learning Experience
Publications: **Audio-Visual:** Overhead transparency of pond succession. Turtox Chicago, Illinos Several films on succession. University of Wisconsin Bureau of Audio-Visual Instruction Madison, Wisconsin **Community:**	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category:

Division General Education

Discipline General Biology

Rationale:

Subject Matter Evolution

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
	Evaluation (Continued) In an essay of about 75 words give examples of successions which have been accelerated by man's activities.	

Reference Materials	Ideas for Additional Learning Experience
Publications: Audio-Visual: Community:	

CARPENTRY-CABINETMAKING

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Julius Van Handel

Category: #8 - 43

The more efficient use of some resources is the result of technical and marketing improvements.

Division Wood Technics T&I

Discipline Carpentry-Cabinet Making

Subject Matter Material Shortages

Rationale: The magazine, Wood and Wood Products, recently had an article stating that the building trades have more than doubled the use of forest products in the last 10 years and according to surveys this has created an over cutting of wood lands to meet the demand. This can be relieved by using substitutes made of by-products or less desirable species whenever possible.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
1. Will list 5 or more new building materials. 2. The student will use 5 or more methods of using our forest products more efficiently with modern technology. 3. Students will construct a questionnaire of 20 questions to survey follow students on their knowledge of these new materials and the methods used to produce them.	Motivational: Film: Conservation of Natural Resources Film #6443, Bureau of Audio Visual Inst. 1327 University Avenue P. O. Box 2093 Madison, Wis. 537001 Delineates the results of waste in the lumber industry and agriculture. An exploration of steps which have been taken and are now being taken to conserve these resources is given. Developmental: Students will do the following: — Make a display of at least 5 or more 2" x 2" samples of building materials or lumber substitutes that use either the by-products of lumber or the utilization of woods, not ordinarily used in the construction industry. Evaluation: The instructor will determine whether objectives have been attained through a brief quiz and examination of the questionnaire devised by the students.	Film Projector Screen Added Sources of Information Forest Products Laboratory publication on Milling & Utilization of Timber Products U. S. Dept. of Agriculture Forest Service Madison, Wis. 53705

Reference Materials	Ideas for Additional Learning Experience
Publications: Uses for Sawdust and Shavings U. S. Forest Serv. Note FPL-047-1946 Uses for Slabs, Edgings, and Trims U. S. Forest Serv. Rec. Note FPL-038-1964 Uses for Forest Residues U. S. Forest Serv. Rec. Note FPL - 092 - 1965 Profitable Use of Low Grade Timber Published in Black Walnut Culture papers presented at Walnut Workshop Carbondale, Ill. August 2-3, 1966, pp. 72-76 Audio-Visual: Community:	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Julius Van Handel

Category: #10-52

The renewable resource base can be extended by reproduction, growth and management.

Division Wood-Technics T&I

Discipline Carpentry-Cabinet Making

Subject Matter Small Woodlots on Farms as a ~~Nautral Resource~~

Rationale:

Many farms are again planting and developing wood lots as both a private source of future building material and as a cash crop.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Student will be able to discuss wood lot growth and how this growth will affect changes in the land use where they live. Student will be able to debate the advantages or disadvantages of returning part of our farm lands back into woods. As it affects our economy - resources - food supplies and recreational areas.	Motivational: Film: Forest Conservation #0759 Bureau of Audio Visual Instruction 1327 University Avenue P. O. - Box 2093 Madison, Wisconsin Emphasizes need for careful conservation of forest resources. Stresses consideration of timber as a crop to be cared for at all times and harvested at regular intervals. Shows graphically the effects of mismanagement: shrinkage of forest resources, soil erosion, and silt filled reservoirs. Presents animated statistics on forest land management by large and small owners and problems facing the latter. Evaluative: Have two groups debate the pros and cons and a third group vote on which side was most convincing.	Publications for reference: Managing the Small Forest by: Forest Service, Soil Conservation Service and Ext. Service U.S.D.A. Farm Bulletin - 1989 Revised 1948 U. S. Department of Agriculture Forest Service Forest Products Lab. Madison, Wisconsin

Reference Materials	Ideas for Additional Learning Experience
Publications: Effect of Tree Spacing on Weight Yields for Red and Jack Pine - by R. R. Maeglin Journal of Forestry 65(9) 647-650 Forest Industry Opportunities in Rural Development U. S. D. A. Agricultural Information Bulletin No. 222 U. S. Department of Agriculture Forest Service Madison, Wisconsin 53705 Audio-Visual: Community:	Take a field trip to a 5-10 year old wood lot.

COMMUNICATIONS

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

William Wolfe
Category: #1 Man and His Environment
Concept #45 - Pollutants and contaminants are produced by natural and man-made processes.

Division General Education
Discipline Communications
Subject Matter Speaking, Thinking

Rationale:
To make students aware through comparison that "man-made" litter in a given area may exceed the "natural" litter, and that although we may have little control over the "natural litter," we do have some control over "man-made." To elicit positive and/or negative reactions to this finding.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Psychomotor The student should be able to collect five pollutants or contaminants on a given plot of school campus and segregate the "man-made" ones from the "natural" ones. **Cognitive** 1. The student should be able to calculate and chart the quantitative differences between the "man-made" and "natural" litter. 2. The student should be able to verbalize in an oral or written comparison statement whether he reacts positively or negatively to the charted information. **Affective** Acceptable performance will include more than one student in the class becoming involved to the extent that he initiates a discussion on his findings with friends or associates.	**Motivational** Students read, and discuss the photographs found in "God's Own Junkyard" by Peter Blake, (Holt, Rinehart & Winston, 1964) Students form lists of varieties of pollutants and contaminants produced by man and nature. **Developmental** Students (given a determined plot of campus to cover) collect five "litter" samples. They bring them back to classroom and separate them into two piles: (man-made) (nature-made). They chart the totals of each pile and state orally to other members of class their observations. **Evaluative** A classroom chart will reflect the quantitative measures of the two categories of pollutants. The instructor will determine whether the objectives have been attained through observation and written-oral forms of communication. Some students should present the concept that both sources produce pollutants (No.45) as well as their reactions to such findings to friends and associates.	1. A copy of: God's Own Junkyard by Peter Blake (Holt, Rinehart, and Winston, 1964) 2. Opaque projector

Reference Materials	Ideas for Additional Learning Experience
Publications: Blake, Peter: God's Own Junkyard Holt, Rinehart and Winston New York, 1964 Audio-Visual: Opaque projector Community:	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

William Wolfe
Category: #4 Population
Division General Education
Concept #96
Discipline Business Communications
Subject Matter Business Letter Writing

Individual citizens should be stimulated to become active in the political process.

Rationale: In light of recent efforts toward the proposal of a constitutional amendment prohibiting legal abortions in conflict with a 1973 Supreme Court decision upholding then, this issue is presently volatile. Tho individual letters to politically-active individuals do, in fact, help form constituency support necessary for democratic franchise, people neglect to air their views in this manner unless assigned to do so, and responses are obtained and shared.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Cognitive: The student should be able to compose and type a letter to a congressman or other elected political official which meets 100% of the following criteria:	Motivational:	
1. Conforms to standards of acceptable business letter form and style as established by instructor and class.	1. Show film, "The Tragedy of the Commons".	16mm film "Tragedy of The Commons"
2. States student's own private position or stand on the legalized abortion issue - acceptable simply as positive or negative.	2. Listen to resource speaker representing Concerned Citizens for the Preservation of Human Life.	Typewriters and Stationery in Typing Lab.
3. Requests a reply from the receiver containing a synthesis of other constituency input on this issue.	Developmental: 1. Instructor and students review necessary business letter form and style and formulate lists of addresses of persons holding political offices contingent upon constituency support. 2. Students produce, type, and mail their own letters.	
Acceptable performance will include the reception of a response letter from the political figure addressed.	Evaluative: Response letters will be received from 100% of persons addressed. Pertinent letter contents may be shared in class situations.	

Reference Materials	Ideas for Additional Learning Experience
Publications: Chapter on Writing to Congressmen, etc., from text on Business Letter Writing.	Orally share response letters received from politicians. Share clippings from newspapers and magazines regarding the progress of a legislative bill and its implementation through court cases.
Audio-Visual: Film: "The Tragedy of the Commons" Available by purchase from: University of California Santa Barbara - $295.	
Community: Resource speakers to air views from ZPG (Zero Population Growth), Planned Parenthood, CCPHL (Concerned Citizens for the Preservation of Human Life), etc.	

William Wolfe
Category: # 7 - 110 (Man Thinks)
Resources have a psychological impact on people.

Division General Education

Discipline Journalism

Subject Matter Writing for school newspaper

Rationale:
To demonstrate ways or means in which the average citizen can act in order to participate in resolving environmental crises.

Instructional Objectives
Cognitive, Affective, Psychomotor

Cognitive

The student should be able to write a treatise at least one paragraph in length, capable of meeting publication standards in the school newspaper on a topic suggesting a means of resolving an environmental crisis.

Acceptable performance will include a readership response from at least 5% of the student body who have tried to implement the suggestion or who have returned a coupon comment on it.

Recommended Learning Activities
Motivational, Developmental, Evaluative

Motivational

1. Instructor or resource speaker delivers a classroom presentation on man's interruption of natural succession chains. (See No. 1 under classroom instruction materials).

2. Class holds a subsequent discussion listing 25 poor environmental practices (i.e.)
   - -- letting tap water run
   - -- abandoning vehicles
   - -- purchasing non-recyclable goods

Developmental

1. Instructor assigns writing of one paragraph which will serve as a resource to school newspaper readers who wish tips for helping individually to solve environmental crises.

2. Instructor orally reviews publication standards of school newspaper.

3. Students write treatises.

Evaluative

Upon publication of the above-written treatise, a readership response from at least 5% of the student body indicating their affirmative implementation of the resolution and/or comments.

Classroom Instructional Materials

1. Posted list of man's activities interrupting natural processes.

   a. killing non-target organisms
   b. resistance
   c. pesticide persistence
   d. CO^2 and dust in atmosphere
   e. rain on week days
   f. damming-fish flooding
   g. thermal pollution
   h. wind and water erosion
   i. killing of predators
   j. natural selection
   k. over-fishing
   l. over-hunting

2. Former issue of your school newspaper to illustrate probable placement of treatises produced and the coupon method allowing for reader response.

Reference Materials	Ideas for Additional Learning Experience
Publications: Back issue of your school newspaper (see no. 2 under classroom instructional materials)	Students calculate the percentages of reader responses to their newspaper "hints" and subsequently inform the newspaper readers of their hierarchy of hint implementation.
Audio-Visual: Chalkboard list or bulletin board clippings regarding at least 25 environmental problems needing to be resolved.	
Community: Possible resource speaker for point #1 under Motivational on reverse side.	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

William Wolfe

Category: #7 Man Thinks

Concept #111 - Emotional reactions can be elicited by exposure to physical objects and geometric forms.

Division General Education

Discipline Communications

Subject Matter Reading

Rationale: Man's emotional and/or intellectual reactions to natural phenomena have been responsible for important technological, hence environmental changes. Awareness of this reading skill (involving natural symbols as opposed to man-made printed ones) may spark more creative national thinking.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Psychomotor: The student should be able to collect and bring to class for display five examples (real or pictorial) of a selected single geometric symbol's frequency of appearance in the natural environment. (Example: If he selects a hexagon, he may bring in a calcite crystal, bit of honeycomb, a picture of a snowflake, etc.) Cognitive: Given a list of 5 geometric symbols, the student should be able to match "natural" examples of each with "man-used" examples of each. He should further be able to indicate which of the examples found by himself and other students he was unaware of prior to the collection and display.	Motivational: 1. Instructor points out that printed symbols are not the only medium one may "read." Man has long read geometric symbols in nature to generate thought. Instructor presents examples of these symbols and then asks class to react. 2. Show film, Bats, Birds, and Bionics (narrated by W. Cronkite) which attempts to illustrate how man-made functions have evolved through observation of natural environment. 3. Class elicits a list of further examples than those generated by film (i. e.) helicopter from dragonfly traction from caterpillar parachute from dandelion seed gothic art from curve Egyptian tomb pyramid from triangle, etc. Developmental: 1. Each student chooses a geometric symbol and seeks 5 real or pictorial examples to illustrate it. 2. The examples are displayed before the class and a brainstorming session is conducted during which X number of uses by man are identified for each symbol displayed. Creative	Film: Bats, Birds, and Bionics available on rental from: McGraw-Hill Films Custer Avenue Evanston, Illinois

Reference Materials	Ideas for Additional Learning Experience
Publications: Any psychological abstracts which show geometric Symbols or perception studies which often use these as illustrations would be useful.	Field trip to a living area (home) which seems to bridge the gap from the "outdoors" to the "indoors" through creative and functional home decoration utilizing these geometric shapes.
Audio-Visual: 16 mm. motion picture projector.	
Community: A geometry instructor may be used as a resource speaker to identify and name geometric forms and to point out practical applications of same.	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category: * #7
Concept #111

Rationale:

Division General Education
Discipline Communications
Subject Matter Reading

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
	Developmental (Continued) and original applications are encouraged to be submitted. Evaluative: 1. Student will complete a test in which he matches a human functional creation with the natural geometric symbol which may have inspired it. 2. Student will list any new awarenesses he obtained from this activity as: "I was not formerly aware of __________ but now I believe that __________."	

Reference Materials	Ideas for Additional Learning Experience
Publications: Audio-Visual: Community:	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

William Wolfe

Category: #12 Modern Man Creates Waste

Concept #90 - Public opinion constitutes a control over the use of conservation practices.

Division General Education

Discipline Communications

Subject Matter The Media

Rationale:

To help students realize that they contribute to the energy crisis by practicing wasteful use of the communications media, and to recognize the impact that their actions may have on influencing the quality of the media.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Affective The student should be able to alter his own television viewing habits as evidenced by his turning off the TV set (hence conserving electrical energy) each time the viewing does not meet his personal standards of "quality". The student should be able to assign a higher quality rating (according to individually-perceived values) to a weekly quantity of the television programming he selects to continue viewing after posing himself the "quality: leave it on - non-quality: turn it off" test.	Motivational 1. Discussion of student's individual TV viewing habits as compared to current Nielsen ratings. 2. Calculation of electrical power costs per one hour of TV operation in the home. 3. Calculation of number of hours of maximum viewing per student. (U. S. average is 5 hours, 25 minutes per day). 4. Discussion of definition of "quality" based on individual values. Developmental Given an assignment to do so, the student is encouraged to turn off the television set every time he can't affirmatively answer the self-posed question, "Is this quality viewing?" A record of viewing hours per day and per week should be kept and positive feedback given for reportage of any reduction noted during a previous day's viewing. Evaluative At the end of the fourth weekly assignment of calculating TV viewing hours per student per week, a minimum of 10% reduction of same should be evident as	Current Nielsen ratings of most popular TV shows.

Reference Materials	Ideas for Additional Learning Experience
Publications: "TV Shows Are Not Supposed To Be Good," by David Karp in: Edge of Awareness, edited by Ned Hoopes and Richard Peck Paperback, Dell Publishing Co., New York, 1966 Audio-Visual: Community:	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category:

Division General Education

Discipline Communications

Rationale:

Subject Matter The Media

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
	Evaluative (Continued) compared to first week. On a post-test contrived to allow the student to scale rate his viewed shows for "quality," a higher overall quality assessment shall be awarded the changed viewing.	

Reference Materials	Ideas for Additional Learning Experience
Publications:	
Audio-Visual:	
Community:	

William Wolfe
Category: #13 Where Do We Go?
Concept #94
Human resources include the physical and mental abilities with which man is endowed and the knowledge he has generated.

Division General Education
Discipline Communications
Subject Matter Spelling

Rationale:
Instructors in post-secondary institutions frequently report a lack of basic communication skills among students. Human resources, if not maintained at a standard of precision acceptable to society, create environmental problems as well. Any progress made by students toward correct spelling enriches the common basis for understanding & aids our environment.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
The student should be able to select (from a larger list presented by the instructor) 15 environmentally-associated words which will meet the following criteria: 1. Optimum utility to their chosen occupation 2. Optimum level of difficulty or challenge as a spelling demonstration.	Motivational: Instructor will present a list of 50 environmentally-associated words which students should perceive as having some relationship to their respective occupational fields of preparation. Students are asked to select the 15 which present the greater challenge toward their ability to spell and use correctly in context as well as being perceived as usable in their future writings.	Sample word list to be embellished by instructor and students includes: acquatic ecology ecological environment fluoridation interdependence pollution population recycling resources etc.
The student should be able to add to that list five other environmentally-associated words (not suggested by instructor) which they perceive as meeting the same criteria.	To this list of 15, students are asked to add 5 words of their own meeting the same criteria: 1. environmentally-oriented word 2. utilitarian to chosen occupation 3. challenging in spelling difficulty	
The student should be able to spell correctly the twenty words in any future contextual writing they may initiate.	Developmental Students are asked to write these words in the context of sentences which illustrate their probable future use by the student occupationally. Students practice correct visualization of letter sequence and interact with peers to exchange mnemonic devices for memory stimulus.	

Reference Materials	Ideas for Additional Learning Experience
Publications:	
Audio-Visual:	
Chalkboard listings for visualization of phonemic combinations.	
Community:	

DRAFTING-ARCHITECTURAL
MECHANICAL

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Dan Buretta

Category: #1-45

Division Trade and Industry

Discipline Architectural Drafting

Subject Matter Plot Layout

Pollutants and contaminants are produced by natural and man-made processes.

Rationale:

Proper calculation of size and installation of septic systems assure against an inadequate plot design and over-saturation the soil.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Given a hypothetical problem, the student will be able to calculate the size of an absorption field needed for private residences in accordance with methods adapted from the "Manual of Septic Tank Practice."	Discussion of: Specific examples of areas where septic systems failed. Sister Bay, Door County, mobile home courts. Problems caused by inefficient systems, such as contamination of drinking water and sickness which occurs. High costs of installation and repair to the owner or passed on to renters and consumers. Use of soil maps for specific areas to select type and location of system. Percolation tests aid in determining the capacity of an absorption field. Through a test problem based on a three bedroom home, the instructional objective will be evaluated.	Charts from the manual of septic tank practice. Soil maps of specific areas. Overhead transparencies of charts.

Reference Materials	Ideas for Additional Learning Experience
Publications: 1. Agriculture Information Bulletin 349 Soil Conservation Service U. S. Department of Agriculture 2. Manual of Septic Tank Practice Superintendent of Documents Government Printing Office Washington, D. C. 20402 Audio-Visual: Community:	How to make a percolation test. Relationship between drinking water supply and septic system. Soil factors that affect absorption fields.

Francis Gotz
Category: #14 - 84
Conservation responsibilities should be shared by individuals, business and industry.

Division Mechanical Drafting T&I
Discipline Mechanical Drafting Unit
Subject Matter Waste in Layout

Rationale:
All draftsmen responsible for the design of layouts for stamping should use sizes common to industrial suppliers to prevent waste, reduce cost and conserve our natural resources.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Psychomotor: The student will draw a layout of a given part and nest the part so the lowest percentage of waste can be achieved. Cognitive: a. Determine waste cost and what it would amount to based on the actual material cost. b. Take the difference between an economical layout and a poor layout and compare it based on a draftsman's monthly salary.	Motivational: The student will select from two layouts which would be the most economical for his employer. One layout being economical laid out while the other would be wasteful. Developmental: During the unit regarding design the instructor will explain the need for economical layout to obtain the best use of materials by: a. Explaining the use of steel suppliers handbooks and catalogs. b. Explain to the student the method of nesting parts. The students will figure out the percentage of waste two ways: a. Percentage by sq. in. b. Percentage by weight. Evaluative: The student will draw a layout and arrive at the lowest percentage of waste.	1. Overhead projector. 2. Drafting instruments in classroom.

Reference Materials	Ideas for Additional Learning Experience
Publications: None	
Audio-Visual: 1. Instructor-made transparencies. 2. These transparencies would show illustrations on how to calculate waste. 3. Two examples made of cardboard. One economical layout and one illustrating wasteful layout.	
Community:	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Francis Gotz

Category: #14 - 84

Conservation responsibilities should be shared by individuals, business and industry.

Division Trade and Industry

Discipline Drafting

Subject Matter Waste in Design

Rationale:

All draftsmen responsible for the design of structures should use modular sizes to prevent waste of materials, reduce building costs and conserve our natural resources.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Psychomotor: The student will draw a house plan following the AIA standards using the modular sizes. We will see that sizes will conform to the standard modules on the drawing.	Motivational The students will calculate the amount of material for structural framing of a modular structure and arrive at a dollar value based on current material cost. The same structure will be altered to the same sq. ft. but the sizes will not be modular and the student will calculate the material for structural framing and arrive at a dollar value based on current material cost. Developmental: During the unit regarding design the instructor will explain the need for designing with modules to obtain the best use or the materials by: a. Explaining the sizes of standard materials. b. Explain the modular system and how material sizes will fit into it.	1. Overhead projector. 2. Drafting instruments in the classroom. Evaluative The students' drawinngs will be dimensioned so the sizes will comply with modular sizes.

Reference Materials	Ideas for Additional Learning Experience
Publications: Architecture, Engineering, Drawing Design by: Spence Uni-Com construction methods. Audio-Visual: Transparencies Community:	

DRAFTING AND DESIGN

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Chester Jensen
Category: #11 - 72
Minerals are non-renewable resources.

Division: Trade & Industry
Discipline: Drafting & Design
Subject Matter: Shapes of Structural Component

Rationale: A continuing high level of industrial activity and a defense program based on the use of large quantities of minerals make clear that shortages of vital mineral resources in Continental United States are real and not imagined. Consequently we must conserve our mineral resources to the best of our ability. The shape and type of material greatly affect the amount of material needed to structural support a given load.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
The student will examine various structural shapes and calculate the minimum stresses that can be obtained using a given cross-sectional area. These areas should include the following: a. wide flange b. I-beam c. T-section d. truss beam	Motivational Give the student 15 min. to solve the following problem: Using three sheets of 9 x 12 paper, scissors, and tape, design a structure that will support the instructor's weight Classroom Activity 1. Have the student analyze various structural shapes to determine strength/weight relationships. 2. Have the student calculate the strength/weight relationships between various materials such as steel, aluminum, wood, concrete, etc. Evaluative 1. Objective test 2. Have the student re-design the paper structure to support a greater load.	1. Cross-sections of various structural shapes. 2. 9 x 12 paper (6 sh/stu 3. scissors 4. tape 5. density chart

Answer to Problem: Cut 1 sheet into ½" strips, coil and tape. Place between other two sheets.

Reference Materials	Ideas for Additional Learning Experience
Publications: Any Strength of Material book	
Audio-Visual: McGraw-Hill Properties of Materials (6 films) Cross-sections of Structural Shpaes	
Community:	

ECONOMICS

Fred M. Arnold

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category: #1 Man and His Environment

Division General Education

Discipline Economics

Subject Matter Introduction to the Political Economy
Economics I
Economics II

Concept #29
Economic efficiency does not always result in conservation of a natural resource.

Rationale: Economic costs of production normally include the direct expenses of labor, land, and capital employed while ignoring the indirect effects (externalities) of production. Negative externalities represent a real cost to society. If the externalities are not integrated into the firm's price structure, the result will be a misallocation of scarce resources.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Given: An example of a specific economic act of production or other use of economic resources, the student should be able to: a. Identify the positive and/or negative externalities (indirect side effects resulting from consumption or production) which result. b. Specify (list) whether the negative externalities are included in the firm's consideration of costs in the case of production or price in the case of consumption. c. Make a judgment as to the magnitude of the social costs (negative externalities) imposed by the act of production or consumption and state whether the previously ignored costs should be: 1. Further ignored 2. Paid for by the consumer 3. Paid by the government 4. Reduced by regulated production and consumption 5. Other	1. Motivational - Developmental Choose examples of industries whose firms' production methods appear to create obvious negative externalities. a. Agriculture and improper but unaccounted pesticide or fertilizer use. b. Paper production in mills which are not accountable for effluent discharge. c. Strip mining operations where mined land is not reclaimed. d. By ignoring external effects of pesticide use, fertilizer use, effluent discharge, ravaged landscapes, etc., individually firms can minimize costs and thus by one measure operate "efficiently". But the firm's cost minimizing behavior may not promote efficiencies for the society at large. They have ignored the general social welfare. 2. Education a. Identify the shortcomings inherent in conventional standards of measuring economic efficiency when the criteria exclude a consideration of the externalities involved.	1. Blackboard and chalk. 2. Photographs, slides or other visual aids which illustrate externalities. 3. Student contributions illustrating externalities.

Reference Materials	Ideas for Additional Learning Experience
Publications: Audio-Visual: Community:	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category:

Division General Education

Discipline Economics

Subject Matter Introduction to the Political Economy
Economics I
Economics II

Rationale:

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
	2. Education (Continued) b. Students may be asked for their response to: 1. Direct in-class questioning 2. Essay questions directed concept #29 3. Multiple choice questions pertaining to concept #29 Note: Economic efficiency would result in conservation of natural resources if relative scarcities of inputs were accurately reflected in market prices and if all costs of production were explicitly considered in the firm's cost profile. Difficulties in measuring and identifying externalities restrict their easy integration into the system of market prices.	

Reference Materials	Ideas for Additional Learning Experience
Publications: Audio-Visual: Community:	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Fred M. Arnold
Category: #8
Concept #40

Division General Education
Discipline Economics
Subject Matter Introduction to Political Economy
Economics I
Economics II

Choices between needs (essentials) and wants or desires (non-essentials) are often in conflict.

Rationale:
Although the distinction between wants and needs is essentially culture bound and/or subject to manipulation, the general concept provides an opportunity to develop two related concepts 1. A basic scarcity of factors of production and 2. The concept of alternative costs (sacrifices inherent in choice marketing.) (Cont'd. next page.)

Instructional Objectives
Cognitive, Affective, Psychomotor

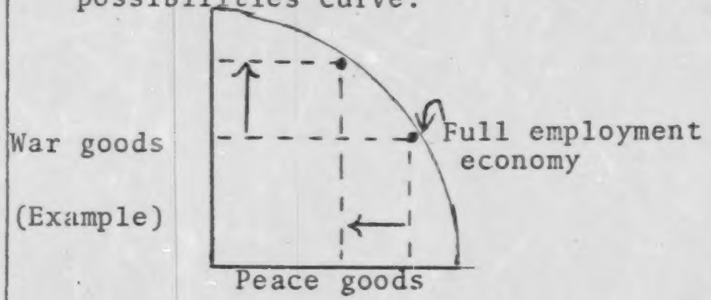
The student should be able to illustrate the scarcity of economic goods and the sacrifices involved in choice making through: 1. The construction and correct labeling of a production possibilities curve (needs - vertical axis) (wants and desires - horizontal axis) which represents an economy at full employment, or 2. A production possibilities curve portraying an individuals's consumption options constrained by personal income considerations.

Recommended Learning Activities
Motivational, Developmental, Evaluative

1. Present a handout and/or through a verbal presentation Parett Nardin's "The Tragedy of the Commons". This will illustrate the finite nature of the planet and its resources as well as giving some insight as to the nature and results of choice making in a market dominated economy.

2. Utilize the production possibilities curve to develop other choice making situations in which choices other than the need-desire conflict are considered. Extend through class discussion the choice making conflict to students' personal, social, essentially non-economic life.

3. The education process can involve a test question asking for an explicit illustration (diagramatic) of the choice making process: i. e., the production possibilities curve.



Classroom
Instructional Materials

Articles:
"Tragedy of the Commons" from The Environmental Handbook

"The End of Scarcity" Saturday Review Spring, 1973

Movie:
"The Tragedy of the Commons" with Parrett Hardin.

Reference Materials	Ideas for Additional Learning Experience
Publications:	
Audio-Visual:	
Community:	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category:

Division General Education

Discipline Economics

Subject Matter Introduction to Political Economy
Economics I
Economics II

Rationale:

(Continued from page 1) Uneeded waste and depletion of resources cannot be tolerated when choice marketing is undertaken under conditions of scarcity. Our non-renewable resource base is finite and therefore in the long run scarce.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
	(Continued) More war goods requires the sacrifice of some peace goods. Follow-up for reinforcement with the movie, "Tragedy of the Commons".	

Reference Materials	Ideas for Additional Learning Experience
Publications: Audio-Visual: Community:	

Fred Arnold

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category: #8 - 42
Supply and demand, in relation to values held by society, determines what is a resource and its economic values.

Division General Education
Discipline Economics
Subject Matter Introduction to the Political Economy

Rationale:
The student should be aware that it is the interaction of supply and such demand which establishes prices and therefore influences the use to which scarce resources are put.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
I. Given: A market oriented economic system in which relative prices reflect the value of economic goods. The student should be able to: A. Identify and explain the determination of an equilibrium price. B. Explain the economic function of prices on the supply side. 1. High prices encourage intensive efforts to supply the resource. 2. Low prices provide less profitability and thus affect the supply negatively.	I. Motivational: A. Pose question, "What is the potential result of a "freeze" in the price of any commodity (gasoline, housing, milk, steel, etc.)? Use recent price freezes as examples of market interference resulting in absolute shortages, rationing, and black markets. B. Note in discussion and lecture that if a product is not in infinite supply and if it has some economic or social use, then some means of allocation and distribution must be devised. As suggested above, a single "administered" price may result in very arbitrary use and may not reflect either need, ability, or willingness to pay in the fluctuating market prices, thus avoiding the arbitrary nature of other systems of allocation and therefore may be suggestive of real social needs.	Chalkboard

Reference Materials	Ideas for Additional Learning Experience
Publications: Audio-Visual: Community:	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category:

Division General Education

Discipline Economics

Rationale:

Subject Matter Introduction to the Political Economy

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
	II. Evaluative: A.P.W.I. Assuming the student has been introduced to a diagramatic illustration of supply/demand and equilibrium prices: A. Ask the student to draw an interesting supply and demand curve for two hypothetical products and to identify clearly the equilibrium prices/quantities in each case. B. Compare changes in the equilibrium quantity of products A and B if: 1. the supply of A decreases and 2. the demand for B increases. C. With reference to B above the student will indicate who has decided to alter quantities demanded and supplied and what is the mechanism through which the decision making process was implemented.	

Reference Materials	Ideas for Additional Learning Experience
Publications: Audio-Visual: Community:	

Fred M. Arnold

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

#8 - 42

Category:

Supply and demand, in relation to values held by society, determines what is a resource and its economic values.

Division General Education

Discipline Economics

Subject Matter Introduction to the Political Economy

Rationale:

The student should be aware that it is the interaction of supply and demand which establishes prices and therefore influences the use to which such resources are put.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
1. Given a market-oriented economic system in which relative prices reflect the value of economic goods the student should be able to: a. Identify and explain the determination of an equilibrium price. b. Explain the economic function of prices on the supply side. 1. High prices encourage intensive efforts to supply the resource. 2. Low prices provide less potential profitability and thus affect supply negatively.	Motivational: 1. Pose question: "What is the potential result of a freeze in the price of any commodity (gasoline, housing, milk, steel, etc.?) Use recent price freezes and historical examples of market interference resulting in absolute shortages, rationing, and black markets. 2. Note in discussion and lecture that if a product is not in infinite supply and if it has some economic or social use, then some means of allocation and distribution must be devised. As suggested above, a single "administered" price may result in very arbitrary use and may not reflect either need or the ability/willingness to pay. Freely fluctuating market prices avoid the arbitrary nature of other systems of allocation and therefore may be more suggestive of social needs. A. P. W. I. Assuming the student has been introduced to a diagramtic illustration of supply and demand and equilibrium prices, 1. Ask the student to draw intersecting supply and demand curves for two hypothetical products and to identify	Chalk Blackboard

Reference Materials	Ideas for Additional Learning Experience
Publications:	
Audio-Visual:	
Community:	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category:

Division General Education

Discipline Economics

Rationale:

Subject Matter Introduction to the Political Economy

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
	A. P. W. I. (Continued) clearly the equilibrium prices/ quantities in each case. 2. Compare changes in the equilibrium quantity of products 1. and 2. if: a. The supply of 1. decreases and b. The demand for 2. increases 3. With reference to 2. above the student will indicate who has decided to alter quantities demanded and supplied and what is the mechanism through which the decision making process was implemented?	

Reference Materials	Ideas for Additional Learning Experience
Publications:	
Audio-Visual:	
Community:	

ELECTRICITY AND ELECTRONICS

Kent Ames

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category: #8 - 43
Efficiencies have been improved in electrical and electronic equipment by technical improvements.

Division Trade and Industry
Discipline Electrical
Subject Matter Power Transmission

Rationale:
Greater electrical efficiencies in power transmission reduced consumption of basic fuels which are in short supply and may only last to the year 2000.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
The student will be able to develop an experiment to prove mathematically that technical developments have increased power transmission efficiencies thereby reducing use of fuels in generating plants. (The load must remain constant.)	Motivational: Demonstrate a blackbox system using lamps as power indicators in a power transmission system.	A.C. - Low current - hi-voltage. A.C. - Hi current - 10 voltage.
For completion the student will be able to: 1. List three causes of increase in efficiency. 2. Complete a drawing of experiment. 3. Complete a mathematical determination of efficiency.	Reading: Standard texts on electricity Reference, E, I, R, W, Hysterisis Transformer and generator construction	Voltimeter, ammeter Wattmeters Solid core transformer Solid core generator armature and field pieces. Laminated core transformer. Laminated generator armature and field pieces.
	Developmental: 1. Discussion of hysterisis relating to core materials. Discussion of I^2R in relation to power transmission. 2. Relate fuel usage to power and power loss.	
	Evaluative: 1. Develop a block diagram and wiring circuit of system. 2. From the parts listed the student will develop the most efficient power transmission system. 3. He will develop the necessary math to prove out the above circuit.	

Reference Materials	Ideas for Additional Learning Experience
Publications:	Discussion of ways to increase power transmission efficiencies.
Audio-Visual:	
Community:	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Kent Ames
Category: #8
Concept #43

Division Trade and Industry
Discipline Electronics
Subject Matter Power Conservation

Efficiencies have been improved in electrical and electronics equipment by technical improvements.

Rationale:

Electronics concerns itself partially with electronic tube and solid state devices. In technical development, transistors have partially replaced the tube. This results in more efficient use of power which is generated using our depleting fuel reserves.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
The student will be able to prove experimentally that a transistor amplifier is more efficient than a tube amplifier having the same power output in relation to the total power input. The student will when asked to identify advantages of transistor amplifiers, state that environmentally the use of transistor has reduced the power demand on generating plants thereby reducing the amount of fuel used which is in short supply.	Motivation: 1. Demonstrate an amplifier showing how to figure mathematically efficiency. Developmental: 1. Discussion of various amplifiers, tube and solid state. 2. Discuss the implications of the construction for reduction of natural resources. Evaluation: 1. Build 2 class A amplifiers. One tube and one transistor. 2. Determine the total input power efficiencies. 3. Determine the power saved if 15000 transistor amplifiers are used in plac of tube amplifiers.	Laboratory materials. Low voltage power supply. High voltage power supply. Output transformers. 6 V 6 tube, 20 w. transistor. Audio oscillator

Reference Materials	Ideas for Additional Learning Experience
Publications:	
Audio-Visual:	
Community:	

FOOD SERVICE INDUSTRY-DAILY LIVING
FOOD PREPARATION
FOOD TECHNOLOGY

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Juanita Decker

Category: #8 - The Environment is Everyone's Business.

Concept # 15 - A cultural and time lag exists between the development of knowledge, in science and technology, and the application of the knowledge to resource and environmental problems.

Rationale:

Man can study and discuss the resource and environmental problems till the end of time, but unless each individual applies his knowledge in environmental day to day living, his knowledge becomes worthless.

Division Man's Environment

Discipline Daily Living

Subject Matter Personal Committment to Practice Environmental Control

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Cognitive: 1. The student will be able to identify at least two areas of personal commitment in abating pollution in his environment and conserving resources. Some of these areas could be: A. The home 1. Waste disposal 2. Water consumption 3. Use of laundry aids 4. Energy used 5. Fuel consumption B. Personal: 1. Smoking 2. Water consumption 3. Consumption of beverages in non-returnable bottles or cans 4. Use of recreation areas	A. Motivational: Attendance at the Environmental Education Institute, at Fond du Lac for three weeks. B. Developmental: 1. The student will examine his own efforts in abatement of pollution and conservation of resources. He will write a statement on what, if anything, he, personally, has done in the past year to attain a better environment. 2. The student will write a statement concerning how his own attitudes have been affected by the Environmental Education Institute. 3. The student will write a statement telling how he will apply knowledge acquired at the Environmental Education Institute.	Guest speakers Films Slides Discussions Lectures Field Trips
Affective: 2. The student will be able to identify reasons why each individual is responsible for pollution and use of resources, and state that pollution abatement and conservation of resources begins with him, the individual.	C. Evaluative: At end of 6 month period, (December 15), the student, with the help of instructors, will examine individuals' efforts prior to Environmental Education Institute as compared with application of knowledge after Environmental Education Institute.	

Reference Materials	Ideas for Additional Learning Experience
Publications:	
Audio-Visual:	
Community:	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category:

Division Man's Environment

Discipline Daily Living

Rationale:

Subject Matter Personal Commitment to Practice Environmental Control

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Psychomotor 3. The student will be able to write a statement committing himself to the application of the knowledge of science and technology he has acquired.		

Reference Materials	Ideas for Additional Learning Experience
Publications: Audio-Visual: Community:	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Juanita Decker
Category: #1 - #7

Division Food Service Industry
Discipline Food Preparation
Subject Matter Controlling Waste in Food Service Kitchen

Man has ability to manipulate and change the environment.

Rationale:
If man is to maintain the natural and cultivated resources at his disposal, then it becomes mandatory for each discipline to practice judicious use of these resources.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
A. The student will be able to name three areas of controlling waste in the preparation of food in the professional kitchen. 1. Water 2. Energy 3. Left-overs	A & B Water 1. One student will prepare salad greens in usual manner, (washing under running water), collecting and measuring amount used by stoppering sink. One student will prepare salad greens by cutting them first, then washing in small tote pan of water. After draining into colander, water will be measured.	colander tote pan lettuce measure
B. Student will be able to demonstrate one (1) method of controlling waste in each of these three (3) areas.	An evaluation will be made by comparing amounts of water used in each method.	manual slicer electric slicer
C. The student will be able to write one (1) short statement recommending: "A method for controlling waste in a professional food service kitchen, in order to preserve our resources,"	Energy 2 One student will slice 1# boiled ham, using manual slicer, timing operation. One student will slice #1 boiled ham, using electric slicer on automatic, timing operation. An evaluation will be made by comparing time of each method used, and an analysis of what each student did during slicing operation. Consider conserving of time vs use of energy.	left-overs kitchen facilities In classroom: Bulletin board display of food pictures on left with ribbons flaring to right indicating what ingredients might be used to create dishes depicted on right.

Reference Materials	Ideas for Additional Learning Experience
Publications:	An additional bulletin board and recipe file for new dishes, created by students, using up left-overs, instead of dumping down disposal. A series of cartoons showing how to control waste, by do's and don'ts. This awareness could carry over into the home and so spread the environmental message.
Audio-Visual:	
Community:	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category:

Division Food Service Industry

Discipline Food Preparation

Rationale:

Subject Matter Controlling Waste in Food Service Kitchen

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
	Continued Leftovers 3. Student will prepare an entree for serving line, using previous day's left-overs and creating name for same. Student will evaluate this method of controlling food waste, by computing cost of item opposed to making dish from fresh foods. C. Student will be able to write statement about controlling waste of our resources, as practiced in professional food service kitchen, using above evaluations.	

Reference Materials	Ideas for Additional Learning Experience
Publications: Audio-Visual: Community:	

Juanita M. Decker

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category: #1 - 13
Man's need for food, fiber, and minerals increases as populations expand and levels of consumption rise.

Division Food Service Industry
Discipline Food Preparation
Subject Matter Nutrition: Loss and Waste in Storage

Rationale: Because of dire consequences that are produced by shortages in foods, students should be aware that careful handling of consumptive, perishable commodities is essential, in order to conserve nutritional value and prevent unnecessary waste of limited quantitative sources.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
A. Student will be able to identify at least two ways in which improper storage results in unnecessary waste including: 1. Loss of food value. 2. Need of larger quantity to make minimum allowance. B. Student will be able to identify nutritional loss and waste of foods not stored properly. These include the following: 1. Change in texture. 2. Change in taste. 3. Change in weight. C. Student will be able to write a short statement on: "Why we need to control waste in storage of foods," which include results from storage demonstration and viewing of film.	Motivational: Student will view 16mm film, "Food and People", and if possible, 16mm film, "Food, Surviving the Chemical Feast." Developmental: A. Demonstration: Student will store: Fresh Produce 1. One head of lettuce, three days uncovered in refrigerator. 2. One head of lettuce, three days, loosely enclosed in plastic bag, in refregerator. Fresh Meats 3. One hamburger patty, three days, uncovered in refrigerator. 4. One hamburger patty, three days, loosely covered in plastic bag, in refrigerator. Left Overs 5. One can corn, drained, in small open pan, three days, in refrigerator. 6. One can corn, drained, in covered pan, three days, in refrigerator. Evaluative: A. Student will be able to make valid comparisons between two methods of storage in each category, using the three criteria given in B.	Lettuce Hamburger Canned corn Refrigerator Plastic wrap

Reference Materials

Ideas for Additional Learning Experience

Publications:

Audio-Visual:

1. 16mm film - #316 - (25 minutes) $12.00 rental
   "Food and People" (shows abundance and waste of food)
2. 16mm film - #8423 - (22 minutes) $25.00 rental
   color
   "Food, Surviving the Chemical Feast"
   (Shows need for possible use of synthetic foods and some current research.)

From: University of California Extension
Media Center
Berkeley, CA 94720

Community:

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category:

Division Food Service Industry

Discipline Food Preparation

Rationale:

Subject Matter Nutrition: Loss and Waste in Storage

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
	Evaluative (Continued): B. The instructor will collect and read student responses in order to determine whether the objectives have been attained.	

Reference Materials	Ideas for Additional Learning Experience
Publications: Audio-Visual: Community:	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Juanita Decker
Category: #6 - 4

Division Food Service Industry
Discipline Food Preparation
Subject Matter Separation and Recycling Waste

Environmental management involves the application of knowledge from many different disciplines.

Rationale:

Because of the vast numbers of people who eat at least 1 daily meal in a Food Service, away from home, the waste from preparation of such food has become a major disposal problem in the environment.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
1. The student will be able to name the 5 categories of waste in the food service kitchen. 1.Paper 2.Glass 3.Cans and aluminum foil 4.Plastics 5.Food waste except grease	1. Lecture - Demonstration: A. Bring full mixed garbage container into classroom. B. Spread plastic on table. Ask 5 students to sort waste into 5 piles, using 5 categories. C. Discussion on separation: 1. Each student will be able to see difference in types of waste.	1. Full garbage can. 2. Large plastic sheet. 3. 16mm film projector. 4. 16mm film.
2. The student will be able to compute the amount of waste from one food service kitchen.	2. Take students to food service kitchen at end of production time: A. Have students line up all waste containers for day. B. Close bags and weigh on freight scale. Tally. C. Multiply by school days for total.	
3. The student will be able to identify methods of waste recycling in 4 categories. 1.Paper 2.Glass 3.Cans - aluminum foil 4.Food waste except grease	3. Use 16mm film or other film strips to show students methods of recycling of waste for food service kitchens. A. Class members will contact recycling plants to place own waste.	
4. The student will be able to demonstrate proper handling of each category of waste.		

Reference Materials	Ideas for Additional Learning Experience
Publications: Audio-Visual: 1. 16 mm film "Recycling Waste"- Reinald Werrenrath 1971 - Journal Films, Inc., Chicago, Ill. How raw materials can be conserved and pollution curbed by turning waste materials into useful products. 2. "Realities of Recycling" - 16mm film U. S. Environmental Protection Agency Stuart Finley, Inc., 1971 Falls Church, Virginia Details recycling: markets for glass, aluminum, paper, etc. Community: Recycling centers for: cans glass paper Land fill sites (for vegetation fill only) Compost piles (community, farm, or individual)	Some or all students (where feasible) could separate waste at home, carry to recycling centers and/or start own compost pile.

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

O. Allen Munson

Category: #1 - Concept 13

Man's need for food, fiber, and minerals increases as populations expand and levels of consumption rise.

Division Food Service

Discipline Food Technology

Subject Matter Food Usage & Waste

Rationale:

In order to make better use of the resources available, students of food technology should be aware of uses which can be made from nutritional food materials that are often discarded.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Students will be able to prepare soup prepared from beef bones. The student will list three items that can be made from the beef stock. 1. Au Jus 2. Beef Gravy 3. Beef Soup	The students will bone out a hind-quarter of beef, then weigh the meat that is taken off, and weigh the bones that are left. Then they should boil off the bones with the skin of vegetables (onions, carrots, celery). After this is done they should weigh the bones again. From this they will find out how much usable material they were throwing away. They will then read in their workbook, on how to make soups and gravies from the beef stock they made from boiling off the beef bones. Evaluative: Through the use of observation and a short quiz the instructor will determine whether the objectives have been attained.	Workbook - Food for Fifty, 5th. ed. Stock Pot Stool Vegetable skin Beef Bones Strainer

Reference Materials	Ideas for Additional Learning Experience
Publications:	
Audio-Visual:	
Community:	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category: #1 - T3
Man's need for food, fiber, and minerals increases as populations expand and levels of consumption rise.

Division Food Service
Discipline Food Technology
Subject Matter Reuse of Animal Fat

Rationale:
In order to make better use of the resources available, students of food technology should be aware of uses which can be made from nutritional food materials that are often discarded.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
The students will be asked to save all animal fat because of its nutritional value. They will also be told what harm it does to a plumbing system. The student will be able to prepare by using the edible fats, a roux for his gravy. The student will demonstrate the work in the school kitchen. The student will list two items that animal fat is used for. 1. Roux 2. Frying shortening.	The students will boil off beef bones, thus making a beef stock that when cooled will have a layer of animal fat over it. From this fat they will make a roux to make gravy. The students will then read in the Food for Fifty workbook on how to make roux from the animal fat. Evaluative: Through the use of observation and a short quiz, the instructor will determine whether the objectives have been attained.	Workbook - Food for Fifty - 5th ed. Beef Bones Flour Stove Animal Fat Pot and Whip

Reference Materials	Ideas for Additional Learning Experience
Publications: Audio-Visual: Community:	

HOME ECONOMICS - CHILD CARE
DIETETICS
EQUIPMENT & APPLIANCES
FOOD & NUTRITION

Dorothea Winek

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category: #3 - 35

Consumption practices are constantly being expanded by our ability to produce and creat wants and markets, which affects the rate of resources used.

Division Home Economics

Discipline Child Care

Subject Matter Layette

Rationale:

In order to make proper decisions students should be aware that big business advertisement causes them to make decisions which should be based on the family's individual situation and their responsibility as a citizen to the environment.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
1. The student will list ways in which disposable diapers have a negative effect on the environment. 2. Using the followin criteria the student will state at least 5 advantages and 5 disadvantages of using cloth or paper diapers in their own unique situation. 1. Effect on the environment in the use and disposal of the product used. 2. Convenience and time involved for mother. 3. Economic factor for one family income. 4. Health factor of child. 5. Considerations of the use of our National product (Ex: cotton vs wood pulp) plus energy and waste in the manufacturing process. 6. Care of the soiled diapers in the home until disposition.	Motivational: Display of disposable and cloth diaper with approximate cost of each assuming the child will use twelve diapers a day over a two-year period when the family owns standard laundry equipment. Developmental: The teacher will lead a discussion on points to consider when making a decision of the kind of diaper an individual family might choose in their own unique situation assuming they are responsible citizens and concerned with the universal environment. Points to Consider: 1. Working mother 2. The mother without home laundry equipment vs satisfactory laundry facilities. 3. The commercial laundry service. 4. The traveling family. 5. The health factor for child (allergies) 6. Effects on environment in manufacturing as well as disposal. Evaluation: The student will defend in a short paragraph why she would choose one kind of diaper over the other if an infant was placed in her home situation with the mother figure of her unique situation	Samples of paper and cloth diaper with approximate cost per use.

Reference Materials	Ideas for Additional Learning Experience
Publications: Book: Population, Resources, Environment Paul and Anne Ehrlich Freeman and Company, San Francisco, CA Page 147 80 The Ecological Conscience Page 44 Robert Disch Prentice-Hall, Englewood Cliffs, NJ Audio-Visual: Community:	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category: #8 - 42
Supply and demand, in relation to values held by society, determines what is a resource and its economic values.

Division Home Economics
Discipline Dietetics
Subject Matter ______

Rationale:
Society has put a social value on beef, especially hindquarter cuts, that has put the supply demand index almost out of reach of the average consumer and has confused the issue of the real need and supposed need of the healthy body for protein.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
The student will be able to list 12 substitutes for beef protein from plant sources. The student will be able to interpret protein need charts and compute amounts needed in an individual case in actual food portions. Ex. Six year old active boy 57 lbs. daily requirement in oz. of the following No. oz. Red Meat No. oz. Poultry No. oz. Veg. Sources (Legumes) Nuts, etc. No. oz. Milk, milk products	Motivational: Have a display of a variety of protein foods in the amount needed for a predetermined person. Ex. Active female: Age 18 - Med. build, etc. Developmental: Discussion on the reasons for the increased intake of beef as our main resources of protein in U. S. 1. Affluent society 2. Social Status, Entertainment Value 3. Misinformation of human needs from animal protein. Discussion and interpretation of information charts. Evaluation: Same as objectives.	Dairy Councils. Charts and information on protein needs for the human. Armour Company meat and nutrient charts on the protein needs of humans.

Reference Materials	Ideas for Additional Learning Experience
Publications: Audio-Visual: Community:	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

June Fredericksen

Category: #6 - 11

Resource depletion can be slowed by the development and adoption of alternatives.

Division Home Economics
Discipline Equipment and Appliances
Subject Matter Electricity

Rationale:

Electrical energy is essential to the future of humanity. We must initiate measures that will conserve its use. Each student has the responsibility to adopt practices that will conserve energy when using electrical appliances.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Affective: 1. The student will use the residual heat offered by the appliance after the cycle is complete such as in the dishwasher, iron. 2. The student will be able to list 5 out of 10 appliances whereby electrical energy can be saved.	Motivational: 1. Teacher demonstrates the conservation of electricity by turning dishwasher off when it reaches the drying cycle. 2. Students will time drying cycle on dishwasher. 3. Students will discuss other appliances whereby electricity will be saved. 4. Students will realize the saving of electrical energy by calculating the cost of electricity using the following formula: VXamp = Watts ÷ 1000 = LWHXrate = Cost Evaluation: The student will meet the objectives as stated.	Equipment Laboratory - Dishwasher - Iron - Range

Reference Materials	Ideas for Additional Learning Experience
Publications: Environment Cost Electric Power Scientists' Institute for Public Information 30 East 68th Street New York, New York 10021 **Audio-Visual:** **Community:**	

Category: #5 - Concept #17

Division Home Economics

Discipline Food and Nutrition

Subject Matter Quality Foods

The management of natural resources in culture bound.

Rationale:
Due to culture patterns obesity has been equated with good health. By re-educating our society to consume the type, amount and quailty of foods in the basic four, the depletion rate of our food resources will be reduced as well as maintaining the health of man.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
1. Discuss cultural and traditional eating patterns of our society, listing five misconceptions of eating habits causing obesity and poor health.	Motivational: 1. View and discuss movie "Nutritional Needs of our Bodies". 2. View slides or pictures of obese people in different life situations vs the "Pepsi" generation.	Movie, "Nutritional Needs of our Bodies" Projector and Screen
2. The student will list foods consumed for breakfast, lunch and dinner of the preview day. The diets will be evaluated by the class with constructive criticism related to nutritional and daily caloric requirements.	Developmental: 1. Chart illustrating basic four food groups. 2. Slide series of health problems caused by obesity and poor nutrition such as stroke patient with mobility problems, heart disease, etc. 3. Calculate nutritional and caloric needs of an individual as recommended by ADA.	Slides: Health Problems Related to Obesity and Poor Nutrition Chart: Recommended Daily Nutritional and Caloric Needs by American Dieticians Association
	Evaluation: Given a written situation, the student will formulate, calculate and plan dietary meals for a family of four meeting the instructional objectives.	

Reference Materials	Ideas for Additional Learning Experience
Publications: Kellog Company, Battle Creek, Michigan "Eating Wise Calories"	Interview families of various cultural-religious backgrounds, relating to eating habits. Evaluate their nutritional habits according to ADA. Prepare a nutritious meal utilizing foods from given cultures.
Foods by Justin, Rust and Vail - Lippincott UWM - College of Agriculture and Life Sciences 1. HG 153B Calories and Weight (25¢) 2. HG I B Nutrition: Food at Work for You s (10¢) 3. HG 74B Food and Your Weight (15¢) 4. Lf 268B Eat a Good Breakfast (5¢)	Visit local grocery stores. Evaluate food products and make a list indicating the most nutritious foods for the least money. Food from each of the basic four groups must be included.
Audio-Visual: 1834 - Nutritional Needs of Our Bodies, 11 min. $3.75 Film Library University of Wisconsin Madison, Wisconsin	
Community: Prepare posters to emphasize necessity of basic four food groups. Visit dietary department of local food services.	

HOME ECONOMICS - FOOD PREPARATION
HOME MANAGEMENT

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

June Fredericksen
Category: #1 - Concept #13
Man's need for food, fiber and minerals increase as populations expand and levels of consumption rise.

Division Home Economics
Discipline Food Preparation
Subject Matter Meal Planning

Rationale:

As population increases, the amount of available food will decline. Therefore expertise in meal planning is necessary.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
1. The students will be able to plan a week's interesting, attractive and nutritional meals for a family of four using uncommon foods readily available at low cost, incorporating meat substitutes.	Motivational: 1. A field trip to a natural food store to study the food sources available. 2. Speaker from major food processing company (General Mills) to display and discuss new meat substitutes. (Bon-Trac or Red Owl's juice burger).	
2. The students will serve a dinner to a select group utilizing the uncommon foods and meat substitutes. An evaluation will be given to each guest asking questions relating to their attitudes toward the dinner compared to their usual food consumption.	Developmental: 1. The students will collect, prepare and taste available natural greens such as dandelion, beet tops, cattail, etc. A nutritional evaluation will be given for each green sample available.	
3. The students will compare the nutritional and caloric value of the dinner compared to the usual foods eaten.	Evaluative: Given a written situation, the student will formulate, calculate and plan meals meeting the instructional objectives.	

Reference Materials	Ideas for Additional Learning Experience
Publications:	The student will take a field trip to a local wooded area and identify and pick natural vegetation which can be included in the daily diet. The student will make a display comparing natural vegetation to the foods we purchase according to their nutritional value and their cost.
Audio-Visual:	
Community:	

June Frederickson

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Division Home Economics

Discipline Food Preparation

Subject Matter Food Preservation

Category: #1 - Concept #13
Man's need for food, fiber, and minerals increases as populations expand and levels of consumption rise.

Rationale: With an increase in food cost and the possibility of "rationing" of certain foods, it is imperative the young homemaker be able to plant, grow, and preserve foods for family consumption. By practicing food preservation in reusable containers, the disposition of plastic containers and cans will be eliminated.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
1. The student will be able to list and explain the procedures in freezing and canning foods. 2. The student will successfully freeze three packages of vegetables and can three pints of fruits.	Motivational 1. Teacher demonstration and the preparation of vegetables and fruits for the freezer. 2. Teacher demonstration on methods of canning fruits and vegetables. 3. Show and discuss film "Freezing Fruits and Vegetables". Developmental 1. Student participation of food preservation methods. 2. Display of containers, supplies, and equipment available on the market needed for food preservation. 3. Speaker on planning a garden. Evaluative Instructor will examine the students' work to determine whether the objectives have been attained.	

Reference Materials	Ideas for Additional Learning Experience
Publications:	Prepare booklet with favorite simple recipes for food preparation - Take a poll on "X" number of peers per family who have planted their own gardens and preserved foods from them - Prepare a chart on the pros and cons of home canning methods vs buying at market -
Audio-Visual: Film 0776 "Freezing Fruits and Vegetables" 16 minutes - $3.00 UW-Madison Film Library	
Community: Visit a local canning factory to observe preservation of foods on a large scale.	

June Fredericksen

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category: 5 - #3
The management of natural resources to meet the needs of successive generations demands long-range planning.

Division Home Economics
Discipline Food Preparation
Subject Matter Food

Rationale: To preserve land for long-range planning, abundance of garbage can be reduced by replacing disposable household items with reusable items, thereby decreasing usage of land for landfill.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
The student will be able to list five disposable products within the foods laboratory which can successfully be replaced with reusable products. The students will bring five usable items from home which can replace the disposable items with equal household efficiency.	Motivational: Take students on a field trip to local garbage disposal to observe abundance of paper disposal items. Developmental: Take students to grocery store and identify disposable items on shelves. Discuss the methods in which these disposable items can be replaced by reusable items. Discuss the economic difference. Evaluative: Through observation and written work the instructor will determine whether the objectives have been attained.	

Reference Materials	Ideas for Additional Learning Experience
Publications: **Audio-Visual:** **Community:** Local garbage disposal - Local grocery store - Tour Kimberly-Clark Paper Co. at Neenah-Menasha	Tour Kimberly-Clark at Neenah-Menasha. Compile a report of data obtained relating to the company's coucery and involvement in production of disposable vs reusable items. Construct a display illustrating disposable items, which can be replaced with reusable items; include a cost analysis of the two categories.

Jane Fredericksen

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Division: Home Economics

Discipline: Food Preparation

Subject Matter: Food

Category: #8 - 40

Choice between needs (essentials) and wants or desires (non-essentials) are often in conflict.

Rationale:

The use of non-re-usable plastic wraps (Baggies, Saran Wrap, Garbage and Trash Bags) for the care of food and food wastes in the home becomes a real problem in sanitary waste disposal because it is not bio-degradable and thus becomes a permanent land pollutant.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Affective: The student will bring a bag lunch to class. Each student will chart 5 bag lunches including her own as to materials used to preserve the freshness of the food until time of consumption. The student will be able to classify containers and materials available as to compatibility to the environment (degradable or non-degradable). The student will use degradable materials and reusable containers in the lab situation for the care of foods and food wastes.	Motivational: Place a glass jar of water in a conspicuous place in the classroom (ex: window sill). In this container of water add a sample of all materials commonly used in the home for care of food and food wastes (ex: Wax paper, plastic bag, aluminum foil, newspaper, brown grocery bags.) The teacher will demonstrate a variety of ways to care for food and food wastes using bio-degradable wraps and re-usable containers identifying reasons for use of each material. Have available and practice the use of bio-degradable materials for lab care of food and food wastes (newspaper, wax paper, re-usable containers). Evaluation: The student will bring a bag lunch which must include a baked product (bread or cake) a portion of a canned product (pickle or canned fruit) or peeled or pared vegetable or fruit (orange slices, carrot or celery sticks). The student will chart their lunch plus 5 other student lunches classifying materials used for protecting and preserving lunch foods as to the compatibility of the materials	Pictures of local street scenes of day the garbage truck comes. A Day At The Dump (National Medical Audiovisual Center Station K Atlanta, Georgia 30324 Bulletin Board of possible materials to use for food care and waste disposal and statistics on length of degradable time

Reference Materials	Ideas for Additional Learning Experience
Publications:	
Audio-Visual:	
Community:	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category:

Division Home Economics

Discipline Food Preparation

Subject Matter Food

Rationale:

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
	Evaluation (Continued): to the environment comparison chart with the one made before the lesson.	

Reference Materials	Ideas for Additional Learning Experience
Publications:	
Audio-Visual:	
Community:	

June Fredericksen
Category: #12 - 90
Public opinion constitutes a control over the use of conservation practices.

Division Home Economics
Discipline Home Management
Subject Matter Laundry

Rationale: Public opinion dictates that the homemaker must have "whiter-whites and brighter-brights" achieved best by the use of polluting phosphate detergents. Literature indicates that the phosphate content found in waterways is critical. Statistics show that 70% of phosphates found in waterways are caused by laundry detergents.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Cognitive: The student would be able to identify, select and fit into categories indicating the percentages of phosphate content of at least 10 laundry aids. Using a reference list provided by library, make a bar graph showing above information. Psychomotor 1. Working in groups of two a neighborhood poll and interview will be taken of at least 12 family units determining the types of laundry aids used. 2. Students will distribute flyers (indicated in Developmental Activity #1). 3. Students will conduct a second poll to determine whether the flyer has influenced the family's buying behavior. Evaluation The student will report any changes in the buying behavior of the families polled.	Motivational: 1. Show film on problems caused by synthetic detergents. 2. On a day when detergent bubbles are readily apparent, take a field trip to the local waste water disposal plant to observe the bubbles caused by the family wash. 3. To collect available statistical data from the water treatment plant concerning the quantity of phosphates in the waste water - City Sanitarian. 4. To tour a large super market to observe the recorded information found on labels on laundry aids concerning phosphate content. Developmental: 1. Working in groups, prepare flyer for public distribution especially to those homes polled, promoting clean water by the use of non-phosphate laundry aids. 2. To make a display of all non-phosphate laundry aids including those distributed by individual agents, such as AMWAY.	Film: Every Drop Fit to Drink Booklets and pamphlets: Soaps and Detergents for The Home Laundering Sanitation in the Home Laundry

Reference Materials	Ideas for Additional Learning Experience
Publications: College of Agriculture and Life Sciences University of Wisconsin Madison, Wisconsin 1 - HG139B Soaps and Detergents for the Home Laundering (5¢) 2 - HG97B Sanitation in Home Laundering Audio-Visual: Soap and Detergent Association Bureau of Audio-Visual Instruction University of Wisconsin Madison, Wisconsin Community: Mr. Yeager, City Sanitarian Department of Health City Hall Wausau, Wisconsin	

HORTICULTURE

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

John Strehmel
Category: #1 - 5 Modern Man Affects His Environment

Division Agri-Business

Discipline Horticulture

Subject Matter Ornamental Trees and Shrubs in an Urban Environment

Rationale:
Urbanization, the rising rate of building construction, road and parking lot constructions, often find very little room for plant life as an important aspect in an esthetically pleasing city environment.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Student will be able to select from nursery catalogs and other publications listed on back.	Motivational: Visit to a newly constructed shopping center, housing development or manufacturing plant where trees and shrubs were effectively used.	Slides illustrating the effective and ineffective planting of trees in urban settings could be produced by individual instructor.
a. 5 special of trees or shrubs tolerant to air pollution of the inner city or highly industrialized area.	Developmental: 1. Assignment of reading material related to plants that are tolerant to various city conditions.	
b. 5 species of trees or shrubs rated for salt tolerance.	2. Student will write a 500 word theme on "The Value of Woody Ornamentals In The City"	
c. 5 trees for narrow spaces.		
d. 2 trees for restricted root space (less than 6 ft. wide).	Evaluative: Student will successfully complete the instructional objectives.	
e. 1 species of Elm resistant to Dutch Elm Disease.		

Reference Materials	Ideas for Additional Learning Experience
Publications:	
1. Bush - Brown, America's Garden Book, Charles Scribner, New York, 1967	
2. Trees for a More Livable Environment, available from Chevron Chemical Company 200 Bush Street San Francisco, California 94120	
3. Nursery Catalogs from various nursery companies.	
Audio-Visual:	
Community:	
Field trip to newly-constructed shopping center, housing development, or manufacturing plant.	

John Strehmel
Category: #1 - 5

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Division Agri-Business
Discipline Horticulture
Subject Matter Soil Pollution vs. Highway Safety

Modern man has affected the structure of his environment.

Rationale:
Continuous application of road salt to remove ice has seriously affected plant life. Large accumulations of salt eventually develop toxic conditions to vegetations, thus removing their potential for beautiful highways and reducing the productivity of the soil.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
1. Student will define term "Road Salt" listing one of its functions. 2. Student will record two symptoms of trees which have been harmfully affected by salt accumulation in the soil. 3. Student will collect and test a soil sample for salt content. 4. Student will record and interpret the data of the salt content test.	Motivational: Field trip to site of damage. Developmental: 1. Demonstrate sampling techniques and operating procedure of solubridge instrument. 2. Show film strip, "Sampling Soil." 3. Write a 100 word report interpreting the collected data. 4. Discuss possible alternatives of removing ice from pavements. Evaluative: Student should be able to meet criteria of stated objectives.	Solubridge instrument (Beckman Scientific Instrument Co.)

Reference Materials	Ideas for Additional Learning Experience
Publications: University of Wisconsin Extension Pamphlet A2100, "Sampling Soils for Testing" Address: Bulletin Room, College of Agriculture University of Wisconsin Madison, Wisconsin 53702 Audio-Visual: Community:	

John Strehmel
Category: #2 - 75
Soil productivity can be maintained by utilizing known agronomic processes.

Division Agri-Business
Discipline Horticulture
Subject Matter Soil Management

Rationale:
Four billion tons of top soil is lost annually in our country through erosion. This process is accelerated if the land is stripped of all vegetation for one or more growing seasons. We can no longer tolerate such losses.

Instructional Objectives
Cognitive, Affective, Psychomotor

Cognitive
The student will:
1. Select from a nursery catalog 3 plant species which can be used as ground covers to anchor the topsoil.

2. The student will locate in a given community one piece of land vulnerable to erosion.

Examples may be either
  a. Level land with bare spots or completely without vegetation
  b. Slopes with bare spots

Psychomotor
The student will plant (on the land above) one ground cover.

Criterion of Success:

1. Plant must be growing or alive after 3 weeks.

Recommended Learning Activities
Motivational, Developmental, Evaluative

Motivational
1. Show two contrasting slides of a piece of land before and after severe erosion has developed.

2. Field trip to a site in community where stages of soil erosion can be observed.

Developmental
1. Each student will collect 10 illustrations of ground cover plants from nursery catalogs.

Label each with the following:
  a. Scientific and common name of plant
  b. Mature height of plant
  c. Is plant shade tolerant or does it prefer full sun?
  d. How far apart should it be planted?

2. Name 2 ground covers for shady exposure.

3. Recommend a plant which grows well on a steep slope with sandy soil and full sun.

Evaluative

Student must successfully complete instructional objectives as specified.

Classroom
Instructional Materials

Catalogs

Reference Materials	Ideas for Additional Learning Experience
Publications: U. of Wis. Extension Bulletin, Ground Covers for Wisconsin - Can be obtained from local county agent's office. Interstate Nursery Catalog - Hamburg, Iowa-1973 Audio-Visual: A set of slides of ground cover plants taken in a local nursery. Community: Local nurseryman to speak on the topic of Ground Covers Which Grow in our Area	Visit to a neighborhood nursery or sod farm where various ground cover plans can be studied.

INTERIOR DESIGN

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Beverly Gold
Category: #4 - 24

Division Home Economics Occupations
Discipline Interior Design
Subject Matter Concept of a Home

Architecture can be one of the positively persuasive influences in the development of a congenial environment.

Rationale:

Buildings should be functional and aesthetically pleasing; and their design should be in harmony with the natural/physical environment in which they are constructed.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
1. The student should evaluate architecture on the basis of a. functionality b. honest use of materials c. cost d. compatibility with the natural environment 2. The student should be able to select examples of architecture that are in harmony with the natural physical environments in which they are constructed. (See Evaluative Activity)	Motivational: Field trip to local architectural firm Purpose: To find out what considerations local architects take into account when designing residential buildings. Developmental: 1. Each student reads current books and periodicals to keep informed of new trends in architecture. 2. Each student selects and brings to class for discussion: 1 article from a book, magazine or newspaper on a new trend in architecture. 3. The students discuss the articles on the basis of: a. functionality of the architecture b. materials used c. the costs involved d. the relationship between the architecture and the physical environment e. the appropriateness of the architecture for their geographic area.	Set of 15 pictures of residential structures

Reference Materials

Publications: (For student reference)

Books: The Natural House: Frank Lloyd Wright
The Owner Built Home: Ken Kern
Inside Today's Home: Faulkner and Faulkner
Dream House Encyclopedia
Inspirations: Hibras
Beginnings of Interior Environment - Phyllis Allen
Whole Earth Catalog
Domebook 2

Periodicals: Life Style
House and Home
House and Garden

Audio-Visual:

Community:

Field Trip to architectural firm.

Ideas for Additional Learning Experience

Evaluative:

Given a set of 15 pictures of residential buildings, each student selects the 3 that illustrate good design, honest use of materials; and are in harmony with the natural environment in which they are constructed.

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Beverly Gold
Category: #7 - #111
Emotional reactions can be elicited by exposure to physical objects and geometric forms.

Division Home Economics Occupations
Discipline Interior Design
Subject Matter Design Concepts

Rationale:
Man appreciates natural forms, but tends to use geometric forms to furnish his building interiors. It is necessary to use natural forms as well as geometric forms to create more humanistic interior environments.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
1. The student should identify and differentiate between geometric and natural forms. 2. The student should verbally communicate his/her reactions to geometric and natural forms. 3. The student should conclude (in a written statement) that natural forms must be included in the furnishing of more livable and humanistic interior environments.	Motivational: Students view slide presentation. This presentation includes slides of natural objects interspersed with slides of home interiors. Developmental: Students discuss slide presentation guided by these questions: a. What geometric forms can you recognize? b. Where do these geometric forms most frequently occur; in nature or in home interiors? c. How do you feel about the geometric forms? The natural forms? d. Which forms do you feel most comfortable with? Why? Evaluative: Each student selects a picture from a magazine of (a) a geometric form (b) a natural form He/she cuts them out and mounts them on a sheet of colored construction paper. Under each picture, the student writes: 1. A personal response to the form 2. The uses of the form in the interior environment In addition, each student writes a statement (100 words or less) on the use of forms in humanizing the interior environment.	Carousel projector Interior design magazines Colored construction paper Rubber cement Paper cutter

Reference Materials	Ideas for Additional Learning Experience
Publications:	
Audio-Visual:	
Slides: Self-made nature slides Burlington House Awards, 1972	
Community:	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category: #8 - 40

Choices between needs (essentials) and wants or desires (non-essentials) are often in conflict.

Division Home Economics Occupations

Discipline Interior Design

Subject Matter Orientation to Interior Design

Rationale: Interior environments should be determined by human needs. However, interiors contain non-essentials that require additional space, maintenance and energy supply. We must differentiate between human needs and wants, and attempt to exclude from home interiors, those wants that adversely effect our natural resources.

Instructional Objectives Cognitive, Affective, Psychomotor

1. The student should be able to list in order (from the most demanding to the most ultimate) Maslow's Hierarchy of Needs.
2. The student should be able to identify basic human needs met by various elements in the interior environment.
3. The student whould be able to differentiate between needs and wants in his/her own interior environment, and list the natural resources that would be conserved if the wants were eliminated.

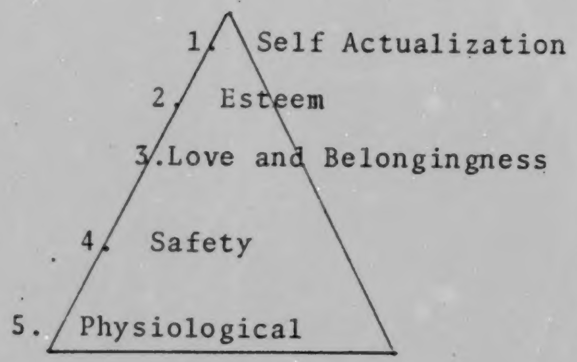
Recommended Learning Activities Motivational, Developmental, Evaluative

Motivational:
Instructor reads to class - An African Fable: The Beginning of Wisdom

Developmental:

1. The instructor presents the concept of human needs based on Maslow's Hierarchy of Needs

   This diagram is shown on an overhead projector:



2. In a discussion, students state what they feel are necessary to include in home interiors to meet each of the five basic human needs.

Classroom Instructional Materials

Overhead projector transparency: Maslow's Hierarchy of Needs

15 slides of home interiors

Reference Materials	Ideas for Additional Learning Experience
Publications: An African Fable: Homes Are For People Satenig St. Marie Published by: John Wiley & Sons Inc., New York Audio-Visual: 15 slides and transparency: The Home: An Environment for Growth Learning kit available from J. C. Penney Co. Community:	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category:

Division Home Economics Occupations

Discipline Interior Design

Rationale:

Subject Matter Orientation to Interior Design

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
	Evaluative: 1. The instructor presents a series of 15 slides of home interiors that suggest basic human needs and the students list the needs illustrated in each slide. 2. Each student selects a room in his/her home, and categorizes the elements in that room into 1. Basic needs (essentials) 2. Wants (non-essentials) 3. Each student then elabotates on his/her wants list, indicating the natural resources that could be conserved if the wants (non-essentials) were eliminated.	

Reference Materials	Ideas for Additional Learning Experience
Publications:	
Audio-Visual:	
Community:	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Beverly Gold #9 #48

Division Home Economics Occupations

Discipline Interior Design

Subject Matter Applied Interior Design

Category:

In any environment, one component like: space, water, air or food may become a limiting factor.

Rationale:

Living spaces are decreasing as population increases. Decisions must be made on the best utilization of physical and psychological space in our interior environments.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
1. The student should be able to evaluate all possible needs and alternatives for a given family activity. 2. The student should utilize the space standards pamphlet when determining physical space requirements for furnishings, as well as the size and shape of the room to be used. 3. The student should be able to design and execute a finished floor plan which provides maximum usage of minimum space. 4. The student should be able to state how he/she has utilized minimum space to meet optimum physical and psychological needs, in the solution of the given problem.	Motivational: The instructor presents the following problem: Design a space for 6 people to eat together. The following needs must be met: a. Create a feeling of belongingness and participation. Family conversations and discussions take place here. b. Provide a surface near the table for serving and occasional food preparation. (Must be near an electrical outlet). c. Provide space for chairs to be pushed back without interfering with traffic patterns. d. Provide storage for tableware (rear food preparation and cleanup area). e. Include a food serving area for formal occasions. Developmental: 1. The student determines minimum physical space necessary for the activities given. 2. The student lists furnishings and architectural features necessary to solve the given problem. (Continued)	Tryon Magna - Planner (Room arrangement kit). Graph paper Furniture templates 12" rulers

Reference Materials	Ideas for Additional Learning Experience
Publications: Space Standards for Household Activities Bulletin 686 Published by University of Illinois Agricultural Experiment Station, Champaign-Urbana, Illinois Audio-Visual: Community:	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category:

Division Home Economics Occupations

Discipline Interior Design

Rationale:

Subject Matter Applied Interior Design

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
	Developmental (Continued) 3. The student determines: a. Furniture dimensions b. Possible multifunctionality of furniture pieces c. Traffic patterns d. Safety factors e. Efficiency f. Lighting (natural and artificial) g. Aesthetic qualities 4. The student develops a series of basic sketches showing furniture arrangement, placement of openings, and traffic patterns. These sketches are discussed with instructor. Evaluative: 1. The student selects the sketch that best solves the given problem in terms of meeting family needs, utilizing minimum space, and integrating aesthetic qualities into the interior environment. He/she produces a finished floor plan (drawn to scale: ½ inch = 1 ft.) along with a written statement indicating how he/she has utilized minimum space to meet optimum physical and psychological needs.	

Reference Materials	Ideas for Additional Learning Experience
Publications: Audio-Visual: Community:	

LAND SURVEY TECHNOLOGY

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

David Scott
Category: #2 - 14

Conflicts emerge between private land use rights and the maintenance of environmental quality for the general public.

Division T & I

Discipline Land Surveying Technology

Subject Matter Land Subdivision Design

Rationale:

When the student understands that by designing land utilization to permit liberal usage while conserving our natural resources, i. e. land forms, forests and open spaces, and shorelines, these conflicts can be reduced.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
A. Given a parcel of land the student will be able to design and construct a drawing of a subdivision to allow for a maximum of open spaces.	Motivational: 1. Slides to show poor design in the making of a subdivision with reference to land forms, forest and open spaces.	Slides of local subdivisions produced by the instructor.
B. Given a parcel of land the student will be able to design and construct a drawing of a subdivision to conserve natural shorelines.	2. On site tours of local subdivisions poorly designed in the use of the land as described in #1.	Slides or transparencies of plats produced by the instructor.
	3. Show examples of the plats of subdivisions shown in the slide and on site tours.	Slide projector. Overhead projector.
	Developmental:	
	A. 1. Guest speaker(s) from urban and regional planning department on open space design. 2. Develop list of concepts in good design.	
	B. 1. Guest speaker(s) from DNR and/or zoning department on shoreline planning. 2. Discussion of problems in shoreline subdivisions. 3. Develop a list of reasons for changing the present methods of saturated population of shorelines.	

Reference Materials	Ideas for Additional Learning Experience
Publications: Sec. 236 Wisconsin State Statutes (Subdivision Law) Sec. H65 Wisconsin State Statutes (Health Codes) City of Madison Land Use Plan Audio-Visual: Community: Department of Natural Resources - Shoreline Management Division Dane County Regional Planning City of Madison Planning	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category:

Division T & I

Discipline Land Surveying Technology

Rationale:

Subject Matter Land Subdivision Design

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
	Evaluative: A. The student will draw a preliminary plan of a subdivision to allow for maximum open spaces. The student will use good drawing techniques and incorporate a minimum of three of the concepts from the list developed by the class. B. The student will draw a preliminary plan of a lakeshore subdivision incorporating at least one of the reasons for changing present methods of shoreline subdivision.	

Reference Materials	Ideas for Additional Learning Experience
Publications:	
Audio-Visual:	
Community:	

David W. Scott

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category: #4 - #25

Zoning is a practice in which land uses are prescribed based upon value judgements regarding the needs of society.

Division T & I

Discipline Land Surveying Technology

Subject Matter Land Subdivision Desig

Rationale: The student should understand zoning regulations and the reasons for them. Thus, he can better conply with these regulations and help resolve any conflicts which may arise between private land users and the regulations.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
A. Given a parcel of land with defined physical and economic conditions, the student will zone it for its use and state why it should be zoned that way. B. Given an area of a county the student will design a land use plan conforming to the local zoning regulations and construct a land use map showing the boundaries of the use districts.	Motivational: Show pictures or slides or conduct on-site inspection of zoned and unzoned areas. and/or Give a hypathetical problem asking the student to tell what he would do with a given parcel of land and then tell him what he can do according to zoning regulations. Developmental: Guest speakers and instructor lectures on disipline areas which are used in making zoning regulations, i.e. soil science, social planning, urban and regional planning, etc. Evaluative: A. Given a parcel of land, with uniform conditions, the student will write a report zoning the land and outline reasons for zoning it the way he did. B. Given an area of a county the student will design a land use plan conforming to the local zoning regulations, and through use of map showing the boundaries of the use districts. The students map must conform with the counties zoning and land use plan within 80% accuracy.	

Reference Materials	Ideas for Additional Learning Experience
Publications:	
Audio-Visual:	
Community:	

MANAGEMENT

David A. Hunt

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category: #12 - 90

Public opinion constitutes a control over the use of conservation practices.

Division Business Education

Discipline Management

Subject Matter Supervisor

Rationale:

With the public interest in the environment, management must keep itself aware of the public's view of the company's contributions toward resource use, both constructive and destructive.

Instructional Objectives
Cognitive, Affective, Psychomotor

Cognitive

Given a choice of newspaper clippings re: public attitudes toward an industry regarding a constructive or destructive contribution toward resource use, the student will select one and:

1. Indicate in writing at least two specific problems presented to management by these public attitudes.
2. List at least two courses of action open to management to react to the public attitude.
3. Give at least two implications of each course of action suggested as to correcting or reinforcing such public attitude.
4. Briefly present a summary of alternative actions that management might take.

Recommended Learning Activities
Motivational, Developmental, Evaluative

Motivational

The student will bring to class newspaper and magazine clippings and other such material showing a public attitude toward industry (or a particular company) regarding a constructive or destructive contribution toward resource use. (For instance the recent note in Business Week regarding Montgomery Ward's ticketing of its products showing the saving of resources,
  i.e. a micro-wave oven uses ¼ the energy to cook a meal for 4 that a standard oven uses.)

These materials will be the basis for two or three class sessions devoted to a discussion of the effects of public attitude on management's decisions toward resource use.

Developmental

I.

A. Limiting himself to no more than 5 min. each student will:

  1. Briefly summarize the collected materials.
  2. Indicate the apparent problems facing management regarding resource use.

Classroom
Instructional Materials

Newspaper clippings

Reference Materials	Ideas for Additional Learning Experience
Publications:	
Audio-Visual:	
Community:	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category: #12 - 90 (Cont.)

Division Business Education

Discipline Management

Subject Matter Supervisor

Rationale:

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
	B. Then the student will lead a class discussion of no more than 10 minutes on the implications to management of such public opinion. C. The instructor, after all students have presented their material, will lead a discussion revolving around the similarities and differences of public attitudes regarding various industries (companies) and the major effects these opinions will have on management decisions regarding resource use. II. The student will write a paper (limited to two typewritten pages) giving at least two courses of action open to management for a specific problem presented in the above.	
Evaluative The student shall have successfully completed the instructional objectives when he defends his summary in #4 (above) and answers all questions presented by the class.	III. The student will then give a class presentation of his courses of action, limited to 10 min., explaining the implications of each course of action. The student will, after the class presentation of III, give a summary to include his recommended action that management should take, limited to 5 minutes.	

← cont.

Reference Materials	Ideas for Additional Learning Experience
Publications: **Audio-Visual:** **Community:**	

MANUFACTURING

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Keith D. Drazkowski
Category: #1 - 45

Division Trade and Industry
Discipline Manufacturing
Subject Matter Metal Production

Pollutants and contaminants are produced by natural and man-made processes.

Rationale:

Air pollution results from the extracting of metal from their ore bases.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Cognitive: The student will be able to list the type of pollutant given off by the metal refinery. The student will be able to state in writing the operation of the electro-static precipitator on this type of pollutant.	Motivational: 1. How does sulfur dioxide affect human beings? 2. What are the long term effects of sulfur dioxide on the environment? Developmental: Film on "The Air We Breath" Explanation of electrostatic precipitator's operation on removal of sulfur dioxide particulants. Evaluative: Examination on the electrostatic precipitator's operation to see if the cognitive objective was accomplished.	Sulfur Dioxide sample. Film: "The Air We Breathe"

Reference Materials	Ideas for Additional Learning Experience
Publications:	Field trip to see a local foundry or smelter's electro-static precipitator in operation.
Audio-Visual: Film: "The Air We Breathe" Shell Oil Corporation Film shows detailed operation of industry's use of electro static precipitators and how they work.	
Community:	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Keith Drazkowski
Category: #2 - 49
Most resources are vulnerable to depletion in quantity, quality or both.

Division Trade and Industry
Discipline Manufacturing
Subject Matter Cast Iron Scrap Cycle

Rationale:
Recycling of cast iron scrap extends the natural depletion of iron ore resource base by 20%.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Cognitive: The student will be able to fill in a flow chart on the cast iron scrap cycle.	Motivational: 1. What % of cast iron can be recycled per heat? 2. How can recycling cast iron extend ore reserves? 3. Can all types of cast iron be recycled? Developmental: Film on: "Cast Iron - Biography of a Metal" Explanation of the cast iron scrap cycle. Evaluative: Examination on the cast iron scrap cycle to see if the cognitive objective was accomplished.	Cast iron scrap samples.

Reference Materials	Ideas for Additional Learning Experience
Publications:	
The Conservation Story	Field trip to a cast iron foundry to see cast iron recycled - poured - shake out - finishing operations and working conditions.
American Educational Publications Education Center Columbus, Ohio 43216	
Audio-Visual:	
This film shows the detailed process of all cast techniques.	
"Cast Iron - Biography of a Metal" U. S. Bureau of Mines	
Community:	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Keith Drazkowski
Category: #2 - 70

Division Trade and Industry
Discipline Manufacturing
Subject Matter Taconite Process

The non-renewable resource base is considered finite.

Rationale:
Developing new processes which upgrade ore, once considered useless, now have given us an extended resource base.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Cognitive: The student will be able to fill in a flow chart on the taconite process.	Motivational: 1. What would happen if we would run out of ore reserves? 2. What percent of the ore is iron bearing in content? Developmental: Film on "Steel Making Today" Explanation of the process of using low grade ore to make taconite pellets. Evaluative: Examination on the taconite processes to see if the cognitive objective was accomplished.	Taconite pellet samples. Film, "Steelmaking Today."

Reference Materials

Publications:

Audio-Visual:

Film - "Steelmaking Today"

U. S. Bureau of Mines

Film shows in detail the flow of material used to make taconite pellets.

Community:

Ideas for Additional Learning Experience

Field trip to a taconite plant.

Field trip to a low grade ore mining site.

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Keith Drazkowski
Category: #7 - 107

Division Trade and Industry

Discipline Manufacturing

Subject Matter Noise Pollution

Man performs some tasks at a high physiological cost.

Rationale:

The Occupational Safety and Health Act has established standards for protecting workers from excessive noise levels because they have damaging physiological effects on workers.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Cognitive: The student will write a short essay discussing 1. Definition of noise 2. Effect on the human being 3. Measurement of noise 4. OSHA regulations 5. Ways and means of reducing noise pollution levels	Motivational: 1. Noise pollution and examples of the above concept. 2. Film: Noise and/or Noise is Pollution 3. Discussion of film. Developmental: 4. Student assignment - Read section 1910.95 - OSHA Standards for Occupational Noise Exposure. 5. Discuss standards with students and introduce A. Sound measurement terminology B. Sound level meter 6. Student Assignment Record levels of sound from various machines in the shop. See how the levels comply with OSHA standards. Evaluative: Subjective - Accuracy and completeness of an essay.	Film: Noise and/or Noise is Pollution Sound level meter. Tape Recorder

Reference Materials	Ideas for Additional Learning Experience
Publications: "Occupational Safety and Health Act - Federal Register" Vol. 36 #105, 1971 U. S. Government Printing Office, Washington, D. C. Audio-Visual: "Noise" #7550, 16mm, from BAUVI, Madison, Wis. "Noise is Pollution" #3973, 16mm, from BAUVI, Madison, Wis. Community:	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Keith Drazkowski

Category: #11 - 72 Minerals are non-renewable resources.

Division Trade and Industry

Discipline Manufacturing

Subject Matter Steelmaking Minerals

Rationale:
Mineral resources are of primary concern to the steel making industry.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Cognitive: The student will be able to state in writing what three minerals are used in steelmaking.	Motivational: 1. Will the supply of metals last longer than your lifetime? 2. Will recycling of metals help the resource extension? 3. Could we exist in a world without metals? Developmental: Film: "Steel on the Rouge" Explanation of the minerals used in steelmaking. Evaluative: Examination on the minerals used in steelmaking to see if the cognitive objective was accomplished.	Iron ore samples. Limestone samples. Coke samples. Film: "Steel on the Rouge"

Reference Materials	Ideas for Additional Learning Experience
Publications:	Have students monitor steel waste in the shop for a month. Discussion on what could be done to eliminate this waste.
Audio-Visual: Film -"Steel on the Rouge" Ford Motor Company Detroit, Michigan Film shows detailed, the processes by which the ores are used to make steel.	
Community:	

MARKETING

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

David Hunt

Category: #3 - 35

Consumption practices are constantly being expanded by our ability to produce and create wants and markets, which affect the rate of resource use.

Rationale:

Through advertising, we are constantly being encouraged to consume more and more beyond our basic needs, which is increasing consumption so greatly that we are greatly endangering the availability of resources.

Division Business Education

Discipline Marketing

Subject Matter Advertising

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Given three sample ads, the student will be able to identify three resources which are (may become) endangered by depletion due to the increase of wants over and above needs for each ad and write five or six paragraphs comprising an essay on the seriousness of this increase of wants for each, giving at least four examples of the effects of continuous excessive use.	Motivational: Have the student collect sample ads showing the creation of wants which exceeds basic needs. Developmental: Have the student briefly identify each of these created wants. Have the student list the resource(s) used in these products. Have the student determine the usual source of the resources used. Have the student submit an annotated bibliography of at least five sources of additional, specific information regarding the critical state of each endangered resource. Have the student list four or five examples of the effect of continued increased use of each resource. Evaluative: Present three ads to the students. 1. Have them identify a created want for each ad. 2. Have them identify three resources which are (may be) endangered. 3. Have them write a 5 or 6 paragraph essay on the seriousness of the continued increased use of the resources giving at least four examples of the effects of continued, excessive use.	Overhead projector.

Reference Materials	Ideas for Additional Learning Experience
Publications:	
Audio-Visual:	
Community:	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

David A. Hunt

Category: #4 - 6

Esthetic resources and recreational facilities of economic and non-economic value are becoming increasingly important in leisure-time activities.

Division Business Education

Discipline Marketing

Subject Matter Marketing

Rationale:

As the buying public gets more and more leisure time (due to short working hours) the marketing student must be aware of the shifts in resource use created by this increase of leisure, and the threat to resources from this shift.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
The student will be able to: 1. List at least 5 esthetic resources. 2. List at least 5 examples of recreational facilities of economic value. 3. List at least 5 examples of recreational facilities of non-economic value. 4. Write a four or five page report explaining the growing importance of #1, #2, #3 in leisure-time activities and indicating the shifts in resource use caused by the increase of leisure.	Motivational: The student is to write a one or two page essay on his favorite leisure-time activity and/or a list of at least 3 recreational areas he likes best to visit. Developmental: 1. The student will present, in two or three minutes, a brief report to the class on his favorite leisure activity and/or recreational areas. 2. The class will then discuss and classify this information as to whether it is: a. An esthetic resource b. A recreational facility of economic value c. A recreational facility of non-economic value 3. The class will discuss the effects on resource use and shifts in their use caused by increased leisure. Evaluative: The student will be evaluated on the basis of his completion of the instructional objectives.	Maps of recreational areas. Directories of camping sites, etc. Books and pamphlets dealing with various leisure-time activities.

Reference Materials	Ideas for Additional Learning Experience
Publications:	
Books and pamphlets dealing with leisure-time activities as may be available and/or as may be appropriate (seasonally) according to when the unit is presented.	Actual trips to nearby recreational sites, to note first-hand the resources of the area and to evaluate them in terms of the Instructional Objectives.
Audio-Visual:	
A wide variety of films and slides are available dealing with recreational leisure-time activities.	
Community:	
Travel bureau representative.	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

David A. Hunt

Category: #14 - 18

Increased population mobility is changing the nature of the demands upon some resources.

Division Business Education

Discipline Marketing

Subject Matter Demographics

Rationale:

As he studies the shifts in population, the marketing student should be aware of the severe stress placed on certain resources due to these shifts so that his marketing decisions may take in to account the possibility of minimizing such stresses.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Given a situation (example) of a shift in population, the student should be able to: 1. Give examples of at least 3 resources which are endangered because of increased use. 2. Cite the consequences of over-use for each of the resources. 3. Explain, in a one or two page report, how specific marketing decisions can affect these resources to reduce the over-use. 4. Identify three industries that he feels can most benefit from such "enlightened" decisions and explain why he feels they should especially need to make such decisions (in a class presentation).	Motivational: The students will compare the 1960 and 1970 census figures for the 20 largest cities (1970) and will classify them according to percentage growth (greatest to smallest). Developmental: Each student will be assigned to a city for which he will: 1. Detect any serious threat to the resources and list them (at least 5). 2. Compare the seriousness of the threat to the various resources. 3. Select three resources for which he will write a one or two page report on how specific marketing decisions can affect the use of the resources and help reduce the over-use. 4. Identify three industries that he feels should especially need to make such decisions. 5. Describe, in a 5 minute presentation to the class, his report (#3 above) and industries (#4 above) and defend his ideas by answering class questions. Evaluative: The student shall have completed the objectives satisfactorily when he has answered class questions that are presented to him.	Copies of the 1960 and 1970 Census figures dealing with metropolitan city sizes.

Reference Materials	Ideas for Additional Learning Experience
Publications: All books and pamphlets from the library dealing with resources and resource use - such as: The Quiet Crisis by Stewart Udall Environmental Problems by Billie Ray Wilson Audio-Visual: Films related to environmental problems created by population shifts (growth), such as: The Community - Indiana University Megalopolis - Cradle of the Future - E. B. Middle Atlantic Seaboard Region - Great Cities Megalopolis - McGraw Community: Local city planner (s). Marketing managers. Representative(s) of local citizens groups. (Save-the-Environment, etc.)	After the students have given their class presentations, the Community Resource Persons shall be present for a class period devoted to discussion of the students' questions.

Wm. D. Hennekens

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Division Business Education

Discipline Marketing

Subject Matter Law

Category: #4 - 25
Zoning is a practice in which land uses are prescribed based upon value judgments regarding the needs of society.

Rationale:
Land is relatively scarce and must be used in the best interests of all. No longer can indiviudls use land as they see fit.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Affective: The student will write a position paper in which he or she will take a position as to land scarcity and individual rights. To be included as a minimum will be the discussion of individual rights and what criteria is necessary to grant or limit these rights.	Motivational: A question will be asked of the class as to whether or not they would allow me to use the right of eminent domain to create an easement on a trout stream running thru their property. Developmental: All students will take a pro or con position as to the legality of this in a class presentation. Evaluative: Position papers will be turned in as to land scarcity and individual rights. These papers must be documented.	Magazine and newspaper articles reflecting court decisions on these rights, to be collected by the instructor involved. Business Law, 9th. ed., Andersen, Kumpf - Southwestern 1973

Reference Materials	Ideas for Additional Learning Experience
Publications:	
Douglas County Zoning Laws	
DNR Publications	
Audio-Visual:	
Slide presentation of examples of property infringement rights in your own community. Use examples of those things covered under "grandfather clauses."	
Community:	
Aldermen Zoning Comm. Personnel Civic Leaders	
These people would be asked to answer questions regarding the community's proper or improper zoning or lack of it.	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

W. Hennekens

Category: #4 - 96

Individual citizens should be stimulated to become active in the political process.

Division BusinessEducation

Discipline Marketing

Subject Matter Business Law

Rationale:

Modern man must positively affect the structure of his environment through active political and social involvement.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Affective: All students will demonstrate their concern by becoming involved in any two of the following within four weeks of the beginning of this course. 1. Join a citizens group concerned with ecology and the environment. 2. Register to vote. 3. Write a letter to a local newspaper concerning a local ecological problem or situation. 4. Write to a public servant concerning an ecological problem or situation. 5. Join a fish and game league. 6. Work with young people on field trips, camping, scouts, etc.	Motivational: All students will be required to seek out and document a local environmental problem. (I used taconite tailings at Silver Bay, Minnesota). Developmental: A discussion will precede a simulated hearing. This discussion will be concentrated on the impact, if any, of the private citizen on the political process. All students will participate in a simulated hearing on the legality of a local environmental problem. Evaluative: All students will take the National Environmental Test both before and after to determine any overall attitude changes as a result of this project.	National Environment Test, Columbia Broadcasting System

Reference Materials	Ideas for Additional Learning Experience
Publications: D. N. R. and Federal Publications dealing with environmental problems in Lake Superior.	Students should be encouraged not only to do or join some of the aforementioned activities but to actively participate by running for office, etc. These students that do so could in return report to the class on what they are doing and what the class could do. To do this they would have to document the worthiness of the effort.
Audio-Visual: Slides would be shown of Silver Bay (Reserve Mining) taken from the air. Each would have to develop their own.	
Community: Field trip to Silver Bay, Minnesota or your own local situation.	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

David A. Hunt
Category: #8 - 40

Choices between needs (essentials) and wants or desires (non-essentials) are often in conflict.

Division Business Education
Discipline Marketing
Subject Matter Marketing Management

Rationale:
The student of marketing management must recognize the conflicts that can develop through creation of wants which may cause a person not to be able to obtain all his needs.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
The student shall be able to: 1. Develop a list of at least 5 wants the creation of which may cause the supplementing of the want for the need. 2. Describe the circumstances under which the marketing manager would be able to correct such a conflict. 3. Explain the problems the marketing manager would face in light of his role in a profit-oriented society. 4. Present to the class a ten minute summary of the above and lead a class discussion, limited to 10 minutes on the presentation.	Motivational: The student will develop a list of his wants and prepare a list of the 5 most important ones. The class will discuss their lists in terms of the necessity to sacrifice essentials (needs) for the non-essentials (wants). Developmental: After the class discussion, each student will develop a new list of 5 wants (non-essentials) which he feels most often cause a conflict because of the need to replace a need (essential). He will explain the place the marketing of the want ((product) plays in such conflict. He will explain the corrective measures that the marketing manager might take. He will explain the problems the marketing manager might face, since he operates in a profit-oriented society. All of this developmental section will be developed in an 8-10 page report for each student.	

Reference Materials	Ideas for Additional Learning Experience
Publications:	Include the Community Resource persons in the class discussion and ask them to answer student questions.
Audio-Visual:	
Community: Marketing managers of local industry. Representatives of environmental groups.	

David Hunt

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category: #8-43

The more efficient use of some resources is the result of technical and marketing improvements.

Division Business Education

Discipline Marketing

Subject Matter Marketing Management

Rationale: With the danger of depletion of some of our key resources, the marketing manager must constantly look for ways to improve the technology of packaging and means of distribution of products so that such depletion is minimized.

Instructional Objectives Cognitative, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Given a list of products, TSSBAT choose one and: 1. Give at least three examples of current waste regarding the use of resources. 2. For each example, give at least two alternatives that might be followed for improving the technology/marketing of the product that will save resource usage. 3. For each alternative, explain how other resources may be affected adversely. 4. Present a defense of each alternative showing the net improvement in resource consumption (limit to 5 min. for each). 5. Defend his recommendations before the class so that the majority of the class accepts them.	Motivational: The student will bring 5 products to class. The class and resource people will spend one or two class periods discussing the packaging/marketing aspects of the various products, especially relating to those aspects where resource waste seems apparent. Developmental: Each student will pick one product to study. 1. He will list all examples he can (at least three-or pick another product) of current waste of resources due to current packaging/marketing practices. 2. He will pick any three of these examples for intensive study. a. He will prepare an annotated bibliography on material relating to this waste of resources. b. For each example he will: 1. Present at least two alternatives for improving the technology/marketing of the product that will save resource usage.	

Reference Materials	Ideas for Additional Learning Experience
Audio-Visual: Community:	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category: #8-43 Continued

Division Business Education

Discipline Marketing

Rationale:

Subject Matter Marketing Management

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
	Developmental Cont'd 2. Show the effect on other resources that may be now affected by the improved technology/marketing. 3. Give an oral defense of his alternatives for improved technology/marketing, limiting himself to 5 minutes for each. Evaluative: The teacher will grade the student: 1. 1/6 for: a. Class participation during the initial discussion of products, based on the relevancy and originality of thought. b. Completeness and relevancy of his list of examples of waste of resources. c. Completeness and relevancy of his annotated bibliography. 2. 1/2 for the originality and practicability of his plan for improvement and for its defense before the class.	

Reference Materials	Ideas for Additional Learning Experience
Publications: (Need to locate specific titles) Books on specific materials Books on packaging Books on distribution Audio-Visual: Community: Bring in for class discussion a 1. Packaging Manager 2. Distribution Manager and/or 3. Marketing Manager	During the student discussion, the community resource people from the local industry will be present to add to the discussion and to answer questions.

David A. Hunt

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Division Business Education

Discipline Marketing

Subject Matter Advertising

Category: #4 - 46
Increasing human populations, rising levels of living and the resultant demands for greater industrial and agricultural productivity promote increasing environmental contamination.

Rationale: Through advertising, we are creating "wants" far in excess of needs so that our environment is becoming contaminated because of inadequate disposal procedures. The advertising student should be made aware of the implications of his "primary" purpose - an increase in demand for goods.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
From a group of ads, the student will pick one and: 1. Identify the created want(s). 2. Identify the potential source(s) of contamination of the environment due to disposal problems. 3. Isolate one specific problem area and a. List the effects on the environment. b. Explain a means of correcting these effects. c. Evaluate such a corrective practice on the total sales of the product. d. Evaluate the net effect of such a corrective practice on the public image of the product. 4. Contrast the overall sales positioning of the product in terms of the present vs. the corrective action proposed.	Motivational: The students will bring to class at least three examples of ads which they consider to be especially effective in creating "wants" and will discuss their ads with the class in terms of these created wants. Developmental: The student will: 1. Identify the created wants. 2. Identify the potential sources of contamination to the environment due to disposal problems. 3. Choose one specific problem for intensive study and write an 8-10 page report on this problem which shall incorporate the instructional objectives of #3 and #4 and which shall contain an annotated bibliography of at least 5 references. Evaluative: The student shall be graded on the basis of aptness of problem identified, completeness of study of the problem and creativeness of corrective actions suggested, reasonableness of summary statement regarding the sales position and completeness of and integration into the paper of the bibliography.	

Reference Materials	Ideas for Additional Learning Experience
Publications: Which Ads Pulled Best? - Decker Publications Standard advertising tests. Audio-Visual: Community:	

David A. Hunt

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Division Business Education

Discipline Marketing

Subject Matter Marketing Management

Category: #6-11
Resource depletion can be slowed by the development and adoption of alternatives.

Rationale:
It is imperative that the managers of our marketing systems become fully aware of the dangers of resource depletion and that they develop alternatives to save these resources and implement the alternatives.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Given a sample product (taken from those discussed in class), TSSBAT: 1. Identify at least three resources which, because of the increasing use of this product, stand in danger of depletion. 2. Develop an alternative that will help to avoid the depletion of the resources. 3. Give a four or five minute talk explaining how he would implement such alternatives. 4. Defend before the class his alternative and implementation of the alternative to the point where the majority of the class accepts such.	Motivational: The student shall bring to class a product he feels represents, by its increased use, a threat to resources. Developmental: The student shall: 1. Present the product to the class, explaining the various resources used. 2. Describe the dangers to these resources by the increased use of the product - to be based on the bibliography in 5 below. 3. Present alternatives in the use (packaging, consuming, disposal) of the product that would help preserve resources. 4. In a 4 or 5 minute presentation, explain how these alternatives can be "sold" to top management. 5. Submit a day prior to his presentation, a copy of his presentation, which is to include an annotated bibliography of at least five relevant publications. Evaluative: The student will be graded by the instructor, ½ based on the oral presentation (how well he is able to defend his alternatives and win class acceptance) and ½ based on the written annotated bibliography and its inclusion in the oral presentation.	

Reference Materials	Ideas for Additional Learning Experience
Publications: (Need to locate specific titles) Books that are included in the student's annotated bibliographies. Books that deal with the general area of resource depletion. Audio-Visual: Community:	

MATHEMATICS-GENERAL
TECHNICAL

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Dan Buretta

Category: - #4 - 46

Increasing human populations, rising levels of living and the resultant demands for greater industrial and agricultural productivity promotes increasing environmental contamination.

Rationale:

Knowing the rate of natural population increase and the increased rate of consumption per capita, helps to identify the over-demand on our natural resources.

Division General Education

Discipline General Math.

Subject Matter Arithmetic Operations

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
1. Given the correct data in a problem situation, the student will be able to calculate the birth rate, the death rate and the rate of natural population increase. 2. The student will be able to identify in writing examples of increased individual consumption as compared to ten years ago. 3. The student will bring examples of articles which depict decrease in available resources based on high rate of population increases.	Discussion: Identify areas of high population increases. Birth rate is defined as the number of births per thousand per year. Birth Rate = $\frac{\text{Births per year}}{\text{Population}} \times 1000$ Death rate is defined as the number of deaths per thousand per year. Death Rate = $\frac{\text{Deaths per year}}{\text{Population}} \times 1000$ Rate of natural population increase equals birth rate minus death rate. Current literature indicates an increase in individual consumption. In a test problem and essay the instructional objective will be evaluated.	Electronic Calculator

Reference Materials	Ideas for Additional Learning Experience
Publications: Pollution: Problems, Projects and Math Exercises Wisconsin Department of Public Instruction Madison, Wisconsin 53702 Audio-Visual: Community:	

Dan Buretta
Category: #6 - 11
Resource depletion can be slowed by the development and adoption of alternatives.

Division General Education
Discipline Technical Math
Subject Matter Percentages

Rationale:
Facts and statistics concerned with paper recycling develop an awareness of the increasing resource depletion, which major publications view as a serious problem.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Given the available statistics on the amount of paper produced from wood chips and recycled paper the student will be able to calculate the percent of paper which is recycled each year.	Discussion: Statistics described in terms of percent can readily be used in evaluation and comparisons. The amount of paper produced in one year is fifty-seven million tons. 4.5 million tons of paper is produced from recycled paper. $\text{Percent Rate} = \frac{\text{Percentage}}{\text{Base}}$ Base is the amount of paper produced. Percentage is the amount produced from recycled paper. Percent rate is that part of every 100 units of paper produced which is produced from recycled paper. Given statistics and the mathematical formula in a test problem the instructional objective will be evaluated.	

Reference Materials	Ideas for Additional Learning Experience
Publications: Conserving of Forest Resources Dr. Gordon Cunningham University of Wisconsin Madison, Wisconsin Audio-Visual: Community:	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Dan Buretta

Category: # 6 - 16

Management is the result of technical and scientific knowledge being applied in a rational direction to achieve a particular objective.

Rationale:

Through the use of mathematical conversions common units of resource usage can be converted to scientific units to evaluate heat & power losses.

Division General Education

Discipline Technical Math

Subject Matter Conversions

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Using the definition for a calorie of heat, the student will calculate the number of calories necessary to supply hot water to an average American home for one day. The student will also be able to calculate the loss of calories in an average home per day, due to a defective hot water system.	Discussion: The average American uses 16.8 gals. of hot water per day. Hot water heaters raise the temperatures of water 125° F. One calorie of heat raises the temperature of one gram of water 1°C. Fahrenheit temp. equals 5/9 times the centigrade temp. plus 32. One gallon equals 3.785 liters One liter of water weighs 1000 grams In a test problem where the average family size is four people and a defective hot water system loses ten gallons of water per day, the instructional objective will be evaluated.	Mathematics Conversion Charts

Reference Materials	Ideas for Additional Learning Experience
Publications: POLLUTION: PROBLEMS, PROJECTS & MATH EXERCISES Wisconsin Dept. of Public Instruction Madison, Wisconsin 53702	
Audio-Visual:	
Community:	

METAL FABRICATION

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

H. Nitschke
Category: #1 - 5
Modern man affects the structure of his environment.

Division Trade and Industry
Discipline Metal Fabrication
Subject Matter Metal Fabrication Process

Rationale:
Since much emphasis is being placed on gaseous resulting of extracting metals from the ore.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Cognitive: The student should be able to list in writing four major sources of harmful air pollution caused by metal extracting industry when using common metals such as iron, stainless and aluminum.	Motivational: A lecture followed by class discussion on various air pollution caused by extracting industries For example: 1. What type of metals tend to produce the most gas causing air pollution? 2. What means can be used to lower gaseous in the air? Evaluative: 1. The student will name four sources of air pollution in an objective quiz. 2. The student will describe the relationship of four natural forms of air pollution with their health effect on man in an objective quiz.	1. Film projector 2. Screen 3. Materials a. Iron b. Stainless c. Aluminum

Reference Materials	Ideas for Additional Learning Experience
Publications:	Advise field trip to local industry.
Audio-Visual: Chemistry of Iron and Steel American Iron and Steel Institute Teaching Aids Distributing Center Bedford Hills, New York 10507	
Community:	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

H. Nitschke

Category: #1 - 45

Pollutants and contaminants are produced by natural and man made processes.

Rationale:

Natural forms of pollutants and contaminants that can be harmful to breathing problems created in Metal Fabrication Industry.

Division Trade and Industry

Discipline Metal Fabrication

Subject Matter Welding

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Cognititive: The student will in writing name four materials and processes that can cause lung irritation in metal fabrication areas. Affective: Concerned with his health the student will demonstrate various ways by doing the following: a. Use safety equipment b. Use various air ventilators in departments c. Take physical examination regularly	Motivational Lost time charts will be presented due to respiratory problems. 1. Is the breathing in of arc welding fumes harmful to the lungs? 2. What health problems are encountered in the buffing department. 3. What is being accomplished to curb some of the above problems? Evaluative: 1. The student will name four materials and processes that can cause lung irritation in the objective quiz. 2. Insert questions in the weekly quizzes.	1. Demonstration a. Welding b. Buffing 2. Mask Equipment 3. Pamphlets 4. Abrasive Material 5. Electrode 6. Film Projector

Reference Materials	Ideas for Additional Learning Experience
Publications: Product Finishings 600 Main Street Cincinnati, Ohio 45202	Advise field trip to local industry.
Audio-Visual: Common Use of Oxy-acetylene by: Linde Sommerfeld Company Oshkosh, Wisconsin	
Community:	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

H. Nitschke
Category: #7 - 107
Man performs some tasks at a high physiological cost.

Division Trade and Industry
Discipline Metal Fabrication
Subject Matter Metal Fabrication Process

Rationale:
Noise safety and health acts were recently passed to protect employees hearing due to excessive noise which can create physical and psychological changes in workers.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Cognitive: A. Student will be able to use the sound level meter to measure various sources of noise.	Motivational: 1. Show film on noise pollution and discuss the film in class.	1. Film projector.
B. The student will state the proper methods and safety precautions when exposed to high noise levels.	2. Demonstrate various noise to class which was previously recorded. a. Air buffer b. Air hammer c. Punch presses	2. Screen. 3. Sound level meter D. B. 4. Recorder.
C. The student will identify that high noise level which can create physical and psychological discomfort as well as permanent disability.	Evaluative: The student will demonstrate in the instructor's presence the proper use of the sound meter by correctly measuring sound level from the noise source which was previously demonstrated.	

Reference Materials	Ideas for Additional Learning Experience
Publications: Audio-Visual: "Noise" - The new pollutant. Indiana University Audio-Visual Center Bloomington, Indiana 47401 Community:	Advise field trip to local industry.

MICROBIOLOGY

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

D. Vicki Bigley

Category: #3 - 44

Division Health Occupations

Discipline Microbiology

Subject Matter Infection

Safe waste disposal including the reduction of harmful and cumulative effects of various solids, liquids, gases, radioactive wastes, and heat is important if the well being of man and the environment is to be preserved.

Rationale:

Protection from accidental infection during collection, handling and disposal of clinical specimens from infected patients is essential for all health workers.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
1. The learner will be able to identify common routes of transmission of infection . 2. The learner will be able to state at least "X" number of methods for preventing accidental infection during collection of clinical specimens. 3. The learner will be able to select proper methods for safe disposal of clinical specimens.	Motivational: Using fluorescent-dye inside a screw-capped culture tube, have students pass this around with instructions that it may contain pathogenic microbes. When finished use U. V. light to show that careless handling of specimen collection containers can cause contamination of health worker's hands. Developmental: 1. Show film - "Triad of Infection" followed by lecture/discussion of the following: a. Routes of transmission of infection b. Pathogenic microbes contained in clinical specimens from infected patients are most virulent when first thrown off by the body. c. Methods of prevention from accidental infection when collecting clinical specimens. d. Methods of safe disposal of clinical specimens in the laboratory. Evaluation: In order to determine whether objectives have been attained each student will develop and demonstrate improper handling or disposal of simulated clinical specimen with remainder of students (orally or in writing) critiquing the demonstrator.	Fluorescent dye. Screw-capped culture tube. Film - "Triad of Infection"

Reference Materials	Ideas for Additional Learning Experience

Publications:

Environmental Aspects of the Hospital, Vol. 1 - Infection Control, U. S. Department of Health, Education and Welfare, Public Health Service, for sale by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. - 45¢

Audio-Visual:

Film - "Triad of Infection"
Eli Lilly and Company
Audio Visual Film Library
P. O. Box 618
Indianapolis, Indiana 46206

Community:

1. Local hospital
    - a. Nurse demonstrating proper care of specimens.
    - b. Laboratory technician demonstrating proper handling and disposal of specimens.
    - c. Central Supply Department - to show their methods of disposal of supplies and waste materials from hospital patients.

D. Vicki Bigley

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category: #4 - 10

Division Health Occupations

Discipline Microbiology

Subject Matter Infection and Chemotherapy

There are certain risks taken, and limitations experienced when manipulating the natural environment.

Rationale: Man's natural environment contains many microbes whose effects may be harmless, beneficial or harmful. The widespread use of antibiotic therapy since the late 1940's appears to have resulted in two related problems. One is in the increase in drug-potentiated infections. The other is the dynamic influence of antibiotics on microorganisms resulting in the development of drug-resistant bacteria.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
1. The student will be able to explain the use of therapeutic chemicals in treatment of microbial infections. 2. The student will be able to propose certain risks/problems related to widespread use of antibiotic therapy.	Motivational: Have students list all of the medicines, prescriptions, etc. in his/their family medicine cabinet. Discussion: 1. Short lecture/discussion of history and role of chemotherapy in treatment of infections. 2. Have students divide into groups of 4-5 and prepare a research report to be presented in class using case studies and infection reports published in medical journals available in local hospital library or interview local M.Ds or epidemiologist. Students will focus on one of the two given areas of consideration: a. Increase in drug-potentiated infections caused by wide-spread use of antibiotic therapy. b. The dynamic influence of antibiotics on microorganisms resulting in development of drug-resistant bacteria.	Instructor will show demonstration plates of "Antibiotic-resistant" and "Antibiotic-sensitive strains of bacteria, i. e. Staphlococcus aurens, Psudomonas aeruginosa, and Escherichia coli.

Reference Materials	Ideas for Additional Learning Experience
Publications: 1. "Environmental Aspects of the Hospital" - Volume I - Infection Control - 1970 - U.S. Department of Health, Education, and Welfare For sale by: Superintendent of Documents U.S. Government Printing Office Washington, D.C. 20402 45¢ 2. Microbiology in Health and Disease, Frobisher Audio-Visual: Community: 1. Local hospital epidemiologist. 2. Local hospital infection control committee. 3. Committee on Environmental Engineering. Aspects of Hospitals and Medical Care Institutions, Public Health Service Washington, D.C.	

D. Vicki Bigley

Category: #5 - 64

Water supplies, both in quantity and quality are important to all levels of living.

Division Health Occupations

Discipline Microbiology

Subject Matter Water Bacteriology

Rationale: Water polluted with "raw" (untreated) sewage usually contains pathogenic, microorganisms which implies a serious public health problem. Certain bacteriologic tests, prescribed by the American Public Health Association, are carried out daily in every public health department to insure public safety.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
1. The learner will be able to list "X" number of pathogenic microorganisms and their related diseases that may be found in water polluted with "raw" sewage. 2. The learner will be able to demonstrate the basic steps in performing the routine water analysis tests. 3. The learner will be able to explain the relationship of an increased "coliform count" and pathogenic microorganisms in water supplies.	Motivational: Have students bring in water samples from streams, lakes, rivers, wells, household tap, etc. and using laboratory procedures as instructed, perform "coliform count" on the specimens. Developmental: 1. Using results obtained from above experiment, discuss interpretation using $<$400 colonies/100ml of water as acceptable level. 2. Lecture/discussion to include a. Listing of pathogenic microorganisms of concern that may be found in water polluted with "raw" sewage. b. How is the coliform count used as an indicator of water pollution? c. What are the possible sources of water pollution indicated by an increased coliform count? Evaluation: The instructor will assess the objectives on a short quiz.	Water sample containers. Sterile Petri plates. Appropriate culture media for cultivation of "coliforms". Waterbath-constant temperature. Sterile pipets. Sterile distilled water in 9ml. aliquots. Test tube racks. Quebec Colony Counter.

Reference Materials

Ideas for Additional Learning Experience

Publications:

Audio-Visual:

Clean Water is Everybody's Business (filmstrip)
U. S. Public Health Service
Communicable Disease Center
Atlanta, Georgia 30333

Community:

Field trip to City Health Department
1. Tour facility with laboratory director.
2. View routine water examinations as performed in a public health department laboratory.

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

D. Vicki Bigley
Category: # 7 - 104

Division Health Occupations
Discipline Microbiology
Subject Matter Microbiology in Everyday Life

Man has the capacity of improving society through sociology, psychology, and science.

Rationale: The science of microbiology has shown modern man that many microbes are beneficial and, in fact, greatly contribute to his ecosystem. Man has benefited greatly through use of microbes. The microbes must not be destroyed by man's manipulation, i.e. unnecessary antibiotic therapy.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Cognitive 1. TLWBAT write several examples each of the beneficial effects of microbes in food, milk, soil, sewage treatment and industry. 2. TLWBAT list the normal flora in the following areas of the human body indicating the beneficial effect or effects of these in each area: a. mouth and/or respiratory tract b. G I tract c. vaginal tract 3. TLWBAT compare the beneficial effects of microbes in his environment with the beneficial effects of other microbes within the human body.	Motivational Instructor asks class to list foods and other items of human consumption that microbes aid in producing. Have students list in discussion as many examples of how microbes are used to benefit man and his environment. Show "Bacteria" film to illustrate ecological importance of bacteria. Developmental 1. Field trip to Waste Water Treatment Plant to show and explain how treatment is affected through use of beneficial microorganisms. 2. Students and instructor discuss beneficial effects of microbes in man directly and indirectly. 3. Instructor will explain and show microscopic examples of normal flora in various areas of the body which contribute to the health of the total human body. Evaluative On subjective test, TLWBAT give 3 examples each of beneficial effects of microbes 1. in his environment (in vitro) 2. within the human body (in vivo)	Handout: Layout of waste water treatment plant with description of process of sewage treatment (primary, secondary, & tertiary) Film: "Bacteria" #5377

Reference Materials	Ideas for Additional Learning Experience
Publications: Any basic Microbiology text. i.e. Microbiology in Health & Disease - Frobisher Principles of Microbiology - Smith	1. Have students take mouth/throat swabs on each other, examine microscopically and/or inoculate appropriate culture media to cultivate/demonstrate normal flora. 2. Have students bring in samples of water, milk, soil, etc. and examine microscopically and culturally to demonstrate presence and kinds of microorganisms in samples.
Audio-Visual: Film: "Bacteria" #5377 BOAVI 1327 University Ave. P. O. Box 2093 Madison, WI 53701	
Community: Guest speaker - Agriculture instructor to explain role of microorganisms in maintaining soil fertility	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

D. Vicki Bigley
Category: # 8 - 88

Division Health Occupations
Discipline Microbiology
Subject Matter Methods of Control of / Bacteri

Man is developing the technical and sociological knowledge needed to control population growth, modify environments and alter resource use patterns.

Rationale: Man has developed methods of control over bacterial population growth based on altering specific environmental factors required by each species (i.e. food, light, temperature, pH, oxygen, osmotic pressure, water, etc.) Man is also capable of controlling his own population growth by self-altering (knowingly or unknowingly) the environmental growth factors necessary to live and reproduce.

Instructional Objectives
Cognitive, Affective, Psychomotor

Cognitive

1. TLWBAT give an example of how each of the given seven growth requirements necessary for bacterial growth are provided in vivo & in vitro.

2. TLWBAT give an example of each of the given seven growth requirements necessary for bacterial growth as to how each can be modified thereby causing the bacterial population growth to decrease or die.

3. TLWBAT give an example of how the physical and chemical control of bacterial growth relate to the seven given environmental growth factors necessary for bacterial growth.

4. TLWBAT compare in writing how "x" number of environmental control methods affect both man and microbe.

Psychomotor (cont. on back)

Recommended Learning Activities
Motivational, Developmental, Evaluative

Motivational

Basic concepts of control of bacterial reproduction (population growth) by altering any necessary environmental factor are indeed directly applicable to our changing environment and how this may affect human population growth in the future.

Developmental

1. Discuss seven growth (environmental) factors necessary for bacterial growth
2. Discuss physical and chemical methods of control of bacterial growth
3. Students will perform selected laboratory experiments which deal with the environmental effects on microbes.
4. Discuss man's danger and need to control population growth with contrasting and comparisons to bacterial population growth involving environmental factors.

Evaluative

The student will bring into class "X" number of newspaper, magazine, etc. articles on subject of how environment is affected by population growth and population growth is affected by environment.

Classroom
Instructional Materials

Incubator
UV Light
Constant temperature waterbath

IN HCI
IN NaOH
Anaerobic jar
Culture media
Autoclave
Stock cultures

Reference Materials

Publications:

1. Smith, Alice Lorraine, PRINCIPLES OF MICROBIOLOGY, 1969, C.V. Mosby Co., St. Louis, Mo.
2. Frobisher, Martin, et.al., MICROBIOLOGY IN HEALTH AND DISEASE, 1969. W.B. Saunders Co. Philadelphia

Audio-Visual:

Film - Tragedy of the Commons
King Screen Production
320 Aurora Avenue
N. Seattle, Wash. 98109
or
Bureau of Audio Visual Instruction
1327 University Avenue
P. O. Box 2093
Madison, Wis 53701

Community:

1. Speaker - local M.D. (Pathologist, etc)
2. Speaker - environmentalist

Ideas for Additional Learning Experience

1. Interested students may elect to develop additional laboratory experiments on methods of control to evaluate effects of other environmental factors on bacterial population growth.
2. Speaker/Field Trip: Local hospital - Central supply dept. - to show application of methods of bacterial control in hospital environment.

(cont. from front)

Psychomotor

5. TLWBAT perform selected laboratory experiments to prove that bacterial population growth can be controlled by altering any of the necessary growth (environmental) factors. Qualitative visual interpretation of laboratory findings will indicate acceptable performance.

NURSING

Eda Ann Kelm
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VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category: #1 - 7
Man has ability to manipulate and change the environment.

Division Health Occupations
Discipline Nursing
Subject Matter Fundamentals of Nursing - Medical Asepsis

Rationale:
Utilization of aseptic technique within the hospital environment prevents or reduces cross contamination of pathogenic organisms.* Hospital acquired infections cause over 50,000 deaths per year.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Psychomotor:	Motivation:	Film - "Safety for All Hands" - Wyeth Laboratories
In the nursing laboratory, the student will:	1. Instructor reviews man, hospital environment concept.	
Demonstrate aseptic hand washing to the instructor(s).	2. Flash picture of healthy infant.	Slide - Tape presentation filmed by Trainex Corporation, Garden Grove, California--on "Medical Asepsis."
Demonstrate aseptic technique in assembling, organizing, and using equipment.	3. Show picture of infant hospitalized due to an infection.	
	Developmental:	
Demonstrate aseptic technique in handling of food/food trays.	The student will view the self individualized mini course on medical asepsis as posted on a schedule in the nursing arts laboratory.	Mini-Course or self individualized instruction package developed by nursing faculty on medical asepsis - North Central Technical Institute, Wausau, Wisconsin.
Dispose of body excreta and other contaminates using aseptic technique.	Evaluation:	
Cognitive	After viewing the individualized mini course on medical asepsis, the student, under the guidance of an instructor,* will demonstrate aseptic technique in simulated situations in the campus laboratory.	Equipment: Microscopes Soap Bed Pan, Urinals Food Food Trays Pails Sinks with Knee or Foot Pedals
1. The student will list the 2 basic principles of aseptic technique in oral or written examinations. 2. In post conference, the students will discuss aseptic technique and their individual responsibility in preventing cross-contamination within the hospital environment.	In the remainder of their educational program, the student will use aseptic technique in all laboratory experiences.	

Reference Materials	Ideas for Additional Learning Experience
Publications:	
Fuerst and Wolfe, Fundamentals of Nursing, J. B. Lippincott, Philadelphia, Fourth Ed., 1969	Review more common pathogenic organisms found in a health care facility with environmental conditions for their multiplication.
Nursing Journals	
Trainex Corporation, Garden Grove, California	Visit various community health facilities to observe aseptic technique and prevention of cross contamination in housekeeping, laundry, central supply, and food service.
Nordmark, Rohweder, Scientific Foundations of Nursing, J. B. Lippincott Co., Philadelphia	Research projects from various literature to gather and analyze data regarding control of infectious disease in health facilities.
Audio-Visual:	
"Medical Asepsis" - Trainex Corporation, Garden Grove, California	
"Safety for All Hands" - Wyeth Laboratories	
Community:	

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VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Division Health Occupations
Discipline Nursing
Subject Matter Fundamentals of Nursing

Category: #3 - 66
Water is a reusable and transient resource but the availability and quantity may be reduced or quality impaired.

Rationale:
Consuming water without serving a purpose creates waste of the resource itself and overburdens facilities which prepare and dispose of it.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Psychomotor When performing the procedure of handwashing in the campus laboratory, the student will alter the habit of unnecessarily consuming water by turning on the tap only when wetting and rinsing his hands utilizing sinks with foot or knee pedals. Utilizing the data from the demonstration and given local cost figures for sewage disposal, the students will calculate the amount of water wasted and approximate the cost for one year.	Motivational Record playing "America, the Beautiful" with various slides projected on two walls simultaneously illustrating the natural beautiful resources in upper Wisconsin (within 50 mile radius of Wausau). Developmental Demonstration by students utilizing aseptic handwashing technique in the campus laboratory. Conditions: Using sinks with knee gatches. Student #1: Tap water runs continually while washing hands. Student #2: Turns tap off after wetting hands and turns it on again for rinsing. All water is collected in pails, measured, and results shared with class. Evaluation In written exam, excluding handwashing, the student will discuss 3 additional ways he may conserve water in his home, hospital, or community.	Film "1980" Sterling Film Co., Chicago, Ill. Co-operation with the No. Central Tech. Inst. Audio-Visual Department. Pails Soap Water Sink with knee or foot pedals. Data regarding cost at local water and sewage disposal plant.

Reference Materials	Ideas for Additional Learning Experience
Publications: Kahl, Wm. C. State Superintendent, Pollution: Problems, Projects and Mathematical Exercises. Grades 6-9, Wisconsin Department of Public Instruction. Audio-Visual: Film "1980" - Sterling Film Company, Chicago, Ill. Community: Visit health care facility disposal and/or treatment system.	1. Visitations to the sewage treatment plant. 2. Check cost of initial installation of sinks with foot and knee gatches vs. standard faucet sinks. 3. Compute cost of water consumed using regular faucet sinks vs. knee or foot pedal gatch type sinks. 4. Interested student could volunteer to research long-term effects of water waste.

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category:

Division Health Occupations

Discipline Nursing

Rationale:

Subject Matter Fundamentals of Nursing

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
	Evaluation (Continued) Utilizing the data collected for one person, several students will calculate the amount of water consumed in 3 hours by a staff of six nurses on a given unit in a health care facility. A letter will be drafted to the Director of Nursing by three students inquiring if they may carry out such an experiment in their assigned clinical area.	

Reference Materials	Ideas for Additional Learning Experience
Publications:	
Audio-Visual:	
Community:	

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VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category: #5 - 3

Division Health Occupations

Discipline Nursing

The management of natural resources to meet the needs of successive generations demands long range planning.

Subject Matter Fundamentals of Nursing - Hospital and Hospital Equipment

Rationale: Within a health facility, the practice of using disposable equipment in patient care is less expensive in man power cost than using reusable equipment. Regardless of expense, hospital personnel must do environmental long-range planning and utilize as much reusable equipment as possible without danger to patient's health.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Cognitive and Psychomotor In an assigned health facility, the student will visit Central Service Supply and identify and list 5 disposable items of equipment used in patient care, which could be replaced with reusable equipment without endangering the patient. In post conference, under the guidance of the instructor, the students will discuss the 5 disposable items identified in central service within the health care facility visited, and together draft a letter recommending possible change to reusable items to the director of nursing of each facility.	Motivational 1. Instructor will discuss in pre-conference, the use of disposable items of equipment and the necessity of evaluating equipment relative to patient safety before changing equipment to reusable items. Developmental Discussion within the hospital (with Central Service personnel.) Discussion with classmates in post-conference. Sending a draft to Director of Nursing in Health Facilities. Students must receive a written reply from drafts sent to health facilities. Evaluation A written quiz testing the student, in which he will list 5 disposable items, which could be replaced with reusable items of equipment and explain why items listed can be used without endangering the patient's health.	Display of disposable and reusable hospital equipment including catheters, irrigation sets, syringes, needles, enema sets, bedpans, urinals, and wash basins.

Reference Materials	Ideas for Additional Learning Experience
Publications: Fuerst and Wolfe, Fundamentals of Nursing, J. B. Lippincott. Nursing Journals	1. Student can request a meeting with health facility's administrative body and share learnings from nursing laboratory and classroom instruction. 2. Student can apply principles learned in educational program to home environment, for a month keep a dollar and cents record, and report her findings to the class. 3. Student can peruse literature and read articles pertinent to usable and reusable equipment and share findings with class. 4. Student can check stores in community as a consumer and report to class those stores, which sell products with reusable containers.
Audio-Visual: Disposable and reusable hospital equipment.	
Community: Observation in health facilities of the community. Observations in stores in the community.	

Barbara Perkofski
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VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Division Health Occupations
Discipline Nursing
Subject Matter Maternity Nursing

Category: #6-101

Family planning and the limiting of family size are important if over-population is to be avoided and a reasonable standard of living assured for successive generations.

Rationale:

Research provides data that indicates 85% of mothers who deliver a newborn are pregnant 6 months later. To provide family planning, information pertinent to contraceptives must be given to the potential mother and father.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Cognitive - Psychomotor In an assigned health facility, or in the community, the student will participate in an educational program in which potential mother/mothers and Father/ Fathers are taught the use of contraceptives with the utilization of charts and audio-visuals.	Motivational Show graphs via transparencies showing world population problem. Interview a mother and father who have just had a baby. Ask questions pertaining to their knowledge of contraceptives and answer questions.	Overhead projector with transparencies. Potential mother and father. Displays - Contraceptive devices Film - "Confidence by Choice" by Ortho Filmstrip - Casette Tape "Contraceptive Measures" by Trainex
Cognitive - Psychomotor Under the guidance of the instructor in post-conference, the students will discuss their experiences teaching potential parents. Utilizing the V. N. A. the students will visit mothers six months post-partum and calculate the percentage who are again pregnant.	Developmental The students will view audio-visuals and displays illustrating various types of contraceptives and their uses. Evaluative With the use of a written test, the student will correctly answer 75% of the questions on contraceptives.	

Reference Materials	Ideas for Additional Learning Experience
Publications:	
Nursing Journals	The student will make a visual aid depicting various types of contraceptives and their uses.
Fitzpatrick - "Maternity Nursing"	
Drug companies who supply contraceptive devices 1. Ortho 2. Wyeth a. Drug companies may be contacted through local salesmen	The student will write to drug supply companies and obtain samples of contraceptives. He will then construct a self-contained mobile teaching display that can be used for teaching purposes in health facilities and in the campus laboratory.
Audio-Visual:	
Trainex Corporation - Garden Grove, California	
Ortho Drug Company	
Wyeth Drug Company	
Community:	
V. N. A. - Visit post-partal mothers - 6 months	

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VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category: #7 - 107
Man performs some tasks at a high physiological cost

Division Health Occupations
Discipline Nursing
Subject Matter Fundamentals of Nursing

Rationale:

Statistics indicate that the practices of preventive medicine allow a man to live in a more homogenious state, e. g. (lack of disease) and with a reduced rate of physiological stress, thereby functioning as a more productive human resource.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Cognitive: Working in groups of 3 or 4, students will research from literary sources multi phasic screening practices and give 10 minute oral reports which include the need, types of screening devices; cost to patient and/or community, location of mobile busses or clinic for screening; personnel education and responsibility, and accuracy or value of these screening tests. Assigned students will inquire from the local health officer the time, location, and types of screening procedures available to the local community.	Motivational: Film: "Special Universe of Walter Krolik" Developmental: Discussion of film emphasizing importance of multi phasic screening in disease prevention. Other points to consider: 1. Lack of communication between patient, family, and health facility personnel. 2. Indications of physiological stress which hindered return of homogenious state of the patient. Evaluation: Answer questions on a written unit exam taken from the 10 minute oral reports.	Film: "Special Universe of Walter Krolik" Name, address of local health department. Reserve in library: Periodicals U. S. H. D. Mobidity & Mortality Reports State of Wisconsin Public Health Department - Division, Communicable Disease

Reference Materials	Ideas for Additional Learning Experience
Publications:	
Shafer, Sawyer, McCluskey, Medical-Surgical Nursing C. V. Mosby, St. Louis	1. Volunteer to participate in local health screening projects.
Local Chapter T. B. Association	2. Be a resource person for individuals who seek information regarding types of multi phasic screening tests available to the community.
Audio-Visual:	
Community:	
Visit local county T. B. infirmary to obtain own t. b. skin test.	

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VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category: #13
Concept - #94
Man has psychobiological and biosocial needs.

Division Health Occupations

Discipline Nursing

Subject Matter Fundamentals of Nursing

Rationale:
Man has a psychobiological need for infinite self-preservation and denies death as a natural biological process. Therefore, nursing education must include death as part of the life continuum.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
1. Cognitive: On a written exam the student will be able to list the five stages of the dying process. 2. Cognitive and Psychomotor: Each student will role play an interview with a dying patient, which will be videotaped. The students and the instructor will observe the tape, and evaluate the nurse's approach with positive and constructive criticisms. 3. Cognitive and Psychomotor: In an assigned health facility, the student will interview a dying patient, identify the stage of the dying process the patient is experiencing, and apply a therapeutic approach.	Motivational: Tape - Dr. Kubler Ross "Interviewing the Dying Patient" Developmental: Film - "Until I Die" - by Dr. Kubler Ross Class discussion of film discussing attitudes toward death in our society, the five stages of the dying process, and the appropriate therapeutic approaches. Evaluative: Through a written exam and observation, the instructor will determine whether the objectives have been attained.	Film - "Until I Die" Video-tape - "Interviewing the Dying Patient" From: Wausau Hospital North-Nursing Service

Reference Materials	Ideas for Additional Learning Experience
Publications: Death and Dying by Dr. Kubler Ross - Macmillan Co., 1970 Periodicals related to death.	The student will work with families of the dying patient assisting them through the stages of a crisis. During a two-day period, the student will initiate a discussion pertaining to death in the student lounge and collect data of attitudes and reactions.
Audio-Visual: Film - "Until I Die" by Dr. Kubler Ross - Macmillan Company Tape - "Interviewing the Dying Patient" by Dr. Kubler Ross - Wausau Hospital North Wausau, Wisconsin	
Community: Visit hospital and nursing homes for patient interviews.	

SUPERVISORY TECHNIQUES

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category: #2 - 49
Most resources are vulnerable to depletion in quantity, quality or both.

Division Business Education
Discipline Supervisory Techniques
Subject Matter Reserve Conservation

Rationale:
Responsible management requires decisions based on a realization that resource conservation must be practical and must be a part of the manager's long-range planning.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
The student will demonstrate his awareness of the vulnderability of resources to depletion both quantitatively and qualitatively by: 1. Attempting to comile a list of all resources NOT vulnerable to such depletion. 2. Compiling a list of the five resources he feels are most critically endangered at this time. 3. Describing in a class presentation limited to ten minutes, a sound management decision that would help protect each of the resources listed in number two, and which would be accepted by a majority of class members.	Motivational: The student will bring to class for discussion a list of all resources he feels are NOT vulnerable to depletion. Developmental: The class will discuss all resources suggested above as to whether or not they are actually vulnerable to depletion either quantitatively, qualitatively or both. The student will then compile a list of the five resources he feels are most in danger of depletion (limited to ten minutes). The instructor will list the resources on the chalkboard and the class will discuss, arriving, by concensus, at the ten most endangered resources. The student will identify the five he feels most endangered and will prepare a class presentation of not more than ten minutes describing a management decision that he feels, if taken, would help prevent the depletion of each of the identified resources.	

Reference Materials	Ideas for Additional Learning Experience
Publications: Books and pamphlets on a wide variety of resources, such as: 1. Water: The Vital Essence by Peter Briggs 2. America's Natural Resources by Charles M. Callison 3. Conservation in the United States by Richard Highsmith 4. Trees and Forests by Stanley M. Mepsen 5. Outdoors U.S.A. by Jack Hayes, ed.	Have the Community Resource People present for the initial Developmental Learning discussion to answer questions.
Audio-Visual: Films and slides such as: 1. Applied Ecology - McGraw 2. Ecology of Man - Graphic Curriculum, Inc. 3. Myths and Parallels: The Story of Conservation Association Films 4. Who Killed Lake Erie - NBC 5. Social Animal - Indiana University	
Community: Local representatives of Conservation Clubs. Director of Parks and Recreation Board. University Extension representatives.	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category:

Division Business Education

Discipline Supervisory Techniques

Rationale:

Subject Matter Reserve Conservation

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
	Evaluative: The student will be considered to have satisfactorily completed the objectives when he has defended his decisions to the satisfaction of a majority of the class.	

Reference Materials	Ideas for Additional Learning Experience
Publications:	
Audio-Visual:	
Community:	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

David A. Hunt
Category: #5 - 95

Division Business Education

Discipline Supervisory Technique

Subject Matter ____________

Historically, cultures with high technological development have used more natural resources than those with lower levels of technological development.

Rationale:

In view of the severe threat to many of our resources today, the modern manager should be aware of the increase in use of resources with the greater development of technology in our society.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
In a 2-4 page report, the student should be able to: Identify two highly technological countries and two countries with little technological development. Compare the consumption rates of the highly vs. poorly developed, technologically, countries. Describe the change in the consumption of resources in the United States as we have become an increasingly sophisticated country technologically. Explain the significance of these findings to the modern manager, in terms of his role in planning, organizing and implementing policies.	Motivational: The student will be assigned a country, by the instructor, for which he is to prepare a 4 or 5 minute class presentation on the technology of the country, the consumption rates of the country, and the condition of resources in the country, especially those that are in danger of depletion. After all presentations have been given, the instructor will lead a class discussion regarding the relationship of technology and of resource usage. Developmental: I. The student will prepare an annotated bibliography of resource use in the United States (at least 5) and will report in detail on two of these to the class in terms of: 1. The historical increase in use of at least 3 resources. 2. The present condition (endangered or not) of each. 3. The short term (5 years) future outlook of each. 4. The long-term (25-50 year) future outlook of each.	

Reference Materials	Ideas for Additional Learning Experience
Publications: Atlases and other technical books on the various countries as assigned. Books on resources and resource usage such as: America's Natural Resources by Charles M. Callison A Different Kind of Country by Raymond F. Dasmann Ecology, Habitats, Niches and Food Chains by Janet Mickelsburg	During the class discussion lead by the instructor, a wide variety of resource persons should be included to participate in the discussion and answer questions.
Audio-Visual: Films on resource conservation such as: Conservation and Balance in Nature (International Film Bureau) Ecology of Man (Graphic Curriculum, Inc.) Myths and Parallels: The Story of Conservation (Association Films) Our Vanishing Land (McGraw)	
Community: Any or all of the following: An advertising manager. A production manager. An "environmental" manager. A purchasing manager, etc.	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category:

Division Business Education

Discipline Supervisory Technique

Rationale:

Subject Matter

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
	Developmental (Continued) II. The student will lead a 5 minute class discussion of the significance of these findings to the modern manager, in terms of his role in planning, organizing and implementing policies. Evaluative: The student will be considered to have met the course objectives when he is able to complete the instructional objectives.	

Reference Materials	Ideas for Additional Learning Experience
Publications: Audio-Visual: Community:	

ELEMENTARY, JUNIOR HIGH SCHOOL, AND SENIOR HIGH SCHOOL

CHEMISTRY

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Ann Serpe

Category: #1 - 45

Pollutants and contaminants are produced by natural and man-made processes.

Rationale:

One of the significant effects of air pollution is the corrosion of metals caused by non-metallic oxides present in the atmosphere.

Division High School Science

Discipline Chemistry

Subject Matter Non-metallic Oxides and Corrosion

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Cognitive 1. A student will be able to name the non-metallic oxides that contribute to air pollution. 2. Students will be able to name the industrial sources of these non-metallic oxides. You may want to list these oxides and their sources - at least the common ones. **Psychomotor** 1. A student will be able to conduct a qualitative experiment preparing these oxides, their aqueous solutions and visually measuring their corrosive effects.	**Motivational** 1. Show slides of corrosive damage to urban statues and European art works. **Developmental** 1. Use periodic chart to identify elements classified as non-metals. Selected readings and discussion to identify non-metals which are released as their oxides in specific industrial operations. 2. Burn 3 non-metals in air to produce carbon dioxide, sulfur dioxide and di-phosphorous pentoxide. Dissolve resulting gases in water and determine p H of aqueous solutions. Divide solutions and allow to react with several metals. Watch for signs of corrosion and relative rates of corrosive action. **Evaluative** 1. Summarize experimental results in written form. Include characteristics and sources of oxide, p H of aqueous solutions and relative rate of reaction with metals.	Text - Modern Chemistry - Holt Periodic Chart Slides and Carousel Deflagrating spoons Asbestos paper Selected indicators Gas collecting bottles Distilled H_2O Elemental C, S, and P Assorted metal strips

Reference Materials	Ideas for Additional Learning Experience
Publications: Man and His Environment - Waste, Marx, Wesley Harper, Row, 1971; pp. 20-28 Air and Water Pollution, Gerald Leinwand, The Breath of Life Donald E. Carr Audio-Visual: Air Pollution (BAVI - 0678) Poisoned Air (BAVI - 676 - 66777) Our Vanishing Fresh Air (PGW) Mineral Challenge (BaVI - 7614) Community:	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Ann Serpe

Category: #3 Safe waste disposal, including the reduction of harmful and cumulative effects of various solids, liquids, gases, radio active wastes and heat is important if the well-being of man and the environment is to be preserved.

Concept #44

Division High School Science

Discipline Chemistry

Subject Matter Thermal

Rationale: Since water is traditionally used to define the heat unit, and the change in temperature of a given amount of water is used to calculate heats of reaction, it is important that the student be able to use the same principles to evaluate threats of thermal pollution.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Cognitive: 1. The student will be able to calculate the temperature change resulting from a given amount of energy transferred to a given mass or volume of water. 2. The student will be able to calculate the amount of energy required to raise the temperature of a given body of water 1°, centigrade. 3. The student will be able to predict the biological and physical effects of raising the temperature of a body of water a given amount.	Motivational: After completing a calorimetric experiment for determining a ΔH value, the instructor should define thermal pollution as involving the same principles and review current literature predicting thermal pollution and its harmful biological and physical effects. Developmental: Supply student with Point Beach data recording amount of energy released into Lake Michigan. (Change into its equivalent in calories). Calculate volume of water in Lake Michigan and change to mass in grams. Calculate time required to raise temperature of Lake 1°C. (Assuming no loss of heat to atmosphere). Evaluative: Give students dimensions of a small local lake and have them calculate difference in pollution rate, if Point Beach type nuclear reactor were located on such a lake. Identify biological and physical effects that would result.	Literature predicting threat of thermal pollution. Measurements of Lake Michigan. Overhead or blackboard for sample calculations.

Reference Materials	Ideas for Additional Learning Experience
Publications:	
The Myth of the Peaceful Atom - Richard Curtis and Elizabeth Hogan	Possibly ask Biology instructor to assist by predicting implications of increased temperature on a marine community.
Environment, Resources, Pollution and Society - William W. Murdoch	
Audio-Visual:	
Community:	
Obtain accurate measurements of a local lake from Recreation Department or ASC office.	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Serpe, Ann

Category: - #6 - Concept #11

Resource depletion can be slowed by the development and adaptation of alternatives.

Division High School Science

Discipline Chemistry

Subject Matter Nuclear Energy

Rationale:

When discussing the theory of radioactivity and nuclear energy, it is important to identify this as a potentially useful unlimited source of energy. Other energy (except solar, which is not yet practical) is simply being changed from one form to another and eventually exhausted.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
1. Affective: The student will be able to take a stand, either to defend the use of nuclear energy or to defend the need for conservation of traditional energy sources by appraising his own energy use and listing those things he would be willing to do to cut down energy use.	Motivational: 1. After discussing theory of fission and fusion nuclear reactions - call student attention to current local controversies regarding location of nuclear power plants. Developmental; 2. Review law of conservation of energy and 2nd law of thermodynamics.	
2. Cognitive: The student will be able to identify the traditional energy sources, their interrelationships and rates of consumption.	3. Discuss published predictions of life of existing energy sources. 4. Discuss energy uses and those that could be minimized to extend resource life.	
3. Cognitive: The student will be able to quote and argue educated predictions as to amount of traditional energy sources remaining.	5. Discuss shortcoming of substituting solar energy. 6. Identify nuclear energy as vast energy source and discuss related problems.	
4. The student will be able to describe the theory of operation of a nuclear power plant and identify the related pollution problems.	Evaluative: 7. Have students write short essay defending their position: I would (or would not) be willing to live within 100 miles of a nuclear power plant. Negative responses should include positive suggestions to relieve energy shortage.	

Reference Materials	Ideas for Additional Learning Experience
Publications: The Crisis of Survival, Borland and others 1976 - Agenda for Tomorrow, Stewart Udall The House We Live In, An Environmental Reader, Blau, Rodenbeck Audio-Visual: Atomic Power Production (Bavi) 6378) How a Boiling Water Reactor Operates (Bavi) 1706 Hiroshima - Nagasaki: August, 1945 (Bavi) 7421 Community:	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Ann Serpe

Category: #7 - 102

The individual must develop his ability to perceive if he is to increase his awareness and develop environmental perspective.

Division: High School Science

Discipline: Chemistry

Subject Matter: Concentrations of aqueous solutions.

Rationale:

Since methods of expressing solution concentrations are an integral part of chemical calculations, it seems logical to introduce a method of expressing pollutant concentrations to give the student a basis for evaluating pollution data.

Instructional Objectives
Cognitive, Affective, Psychomotor

Cognitive

1. The student will be able to convert data given in other units to parts per million concentration expression.
2. The student will be able to place pollutant concentration data in parts per million on a scale identifying concentrations as normal, tolerable or toxic.

Affective

The student will be able to evaluate actual water sampling data in ppm concentration as to the severity of pollution in the sample.

Recommended Learning Activities
Motivational, Developmental, Evaluative

Motivational

1. Show students 3 solutions with concentrations of dissolved molecular and ionic solutes expressed in moles per liter and % solute methods. One solution distilled water, another "hard" drinking water, the third, slightly contaminated drinking water. Allow them to compare color, clarity, odor and taste of the 3 solutions.

Developmental

2. Discuss difficulties in using the above methods of con. expression when working with very dilute solutions.
3. Show calculations for changing other methods of conc. expression to ppm. Discuss tolerance range in parts per million for each specific pollutant.

Evaluative

4. Given actual water sampling data in ppm, have students analyze the data quantitatively answering questions: Would that water taste good? What in that water could actually hurt me?

Classroom Instructional Materials

Water Samples

1. Pure distilled
2. Hard drinking water
3. Slightly contaminated drinking water

Water Sampling data expressed in ppm.

Reference Materials	Ideas for Additional Learning Experience
Publications: Pesticides: The Wisconsin Picture - table inside back cover Water - The Vital Essence: Chp. 8 & 9 - Briggs, P. Death of the Sweet Waters: Carr, Donald E. Audio-Visual: Who Killed Lake Erie (4524-2525) BAVI Every Drop Fit to Drink (6141) BAVI Water Pollution (7875) BAVI Community: Contact city utilities for sampling on city water supply.	The logical follow up activity would be to introduce techniques of water sampling and analysis. Have rural students bring samples of home well water and plan a field trip for collecting and analyzing water from a nearby lake. The data from these experiments could then be tabulated and related to ppm tolerance scales presented previously. Possible alternate motivation: The teacher could introduce this as a game -- asking student to predict visually which water sample they would consider best for consumption.

Ann Serpe

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category: #9 - Concept #48: In an environment, one component like: space, water, air or food may become a limiting factor.

Division High School Science

Discipline Chemistry

Subject Matter Predicting yields in quantitative relationships

Rationale: When predicting yields in chemical reactions, identifying the limiting factor and its role in determining yield is vital. This same relationship could be compared to an environmental system.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Cognitive: 1. The student will be able to identify the variables in the environment as either reactants or products of modern "man-technology" centered society. Affective: 1. The student will be able to qualitatively predict the effect of minimizing any one of the "reactant" variables upon the "yield" of "product" variables.	Motivational 1. After students have mastered quantitative limiting factor type calculations on mass-mass, mass-volume, volume-volume type problems, introduce a hypothetical equation: Considering the earth as a closed system. Modern society has a limited quantity of each "reactant" to work with. Such as: mineral ores + hycarbon fuels +.... energy + metal +........ Developmental: 1. Have students list the things they consider reactants and products in this equation. Draw on these in discussion and use normal equation writing form to express accumulated lists. Evaluative: 1. Ask students to predict, in written form, the adjustments that would have to be made in the "equation" if one of the reactants were completely changed to "product." Which reactants are not consumed when going from reactant to product side of equation? Discuss student observations and predictions with entire group.	No new materials really needed. Blackboard or overhead to show accumulation and corrections of equation as it is finalized. Any background environmental readings would help students visualize equation form.

Reference Materials	Ideas for Additional Learning Experience
Publications:	
Audio-Visual:	
Community:	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Ann Serpe

Category: #11 - Concept #69

Division H. S. Science

Discipline Chemistry

Subject Matter Conservation of Energy

Mineral conservation involves the utilization of all known methods of using the minerals of the earth's crust that will cause them to serve more people for a longer time.

Rationale: Calculations of energy, requirements for endothermic reactions are used in chemistry to predict conditions required for a reaction to take place. This same type of calculation could be used to show mineral and energy conserving potential of recycling.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Cognitive: 1. The student will be able to calculate energy required to remove 1 gram of a pure metal from its naturally occurring ore. 2. The student will be able to calculate the energy required to melt one gram of pure metal for reuse. 3. The student will be able to compare the two above figures in terms of energy saved by recycling metals. Affective: 1. The student will support recycling activities in the community.	Motivational: 1. Ask students to express their feelings on the importance and shortcomings of recycling metals. Compile a list of pro and con sentiments. Developmental: 1. Consider the con list first. Cross off the list those things which could be tolerated if it meant continuing to have the resource to use. 2. Introduce energy saved as another pro feature the students will probably have overlooked. 3. Use aluminum : Calculate (using Δ_H values) the energy required/gram aluminum obtained from refined bauxite. Using the melting point and AH_f value, calculate energy required to melt 1 gram of aluminum for reuse. 4. Determine the mass of an empty all-aluminum beer can. Calculate energy saved by reusing it as opposed to make an entirely new can. Evaluative: 1. Have students do similar calculations for iron and tin/gram	Table Δ_H values Centigram balance Empty aluminum beer cans.

Reference Materials	Ideas for Additional Learning Experience
Publications: ALCOA AD (Aluminum Pass it On) Time - June 18, 1973	A walk through a land fill site to impress quantity of waste metal involved.
Audio-Visual: Chemistry of Aluminum (BAVI - 4346) (Reynolds) - Industrial process of extraction from Buxite.	
Community: A spokesman from the active community group pushing recycling (usually girl scounts, environmental group, etc.)	

INTRODUCTION TO ECOLOGY

David Hackbarth

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category: #1-7

Division Science-Sr. High

Discipline Intro. to Ecology

Subject Matter Succession-State Presentation

Rationale:

In order for man to maintain a grassland area (prairie) it is often necessary to remove the vegetation by burning.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
The student will state that in order to preserve a grassland area (prairie), its succession must be limited by burning or mowing. The student will state that burning or mowing does not harm the roots of grassland area (prairie) grasses or fauna.	Developmental A field trip to a grassland area (prairie) to observe controlled burning. This is to be followed up by a comparative field trip four weeks after the burning has taken place. Discussions Based on the field trip observations. Discuss the advantages, e.g., (replacing nutrients, creating pasture land) and the disadvantages, e.g., (air pollution, burning of unspecified areas). Evaluation Quiz or one page report incorporating the facts that burning does not harm grasses or subterranean fauna and that it is necessary to limit succession.	None

Reference Materials	Ideas for Additional Learning Experience
Publications: Audio-Visual: Community: Local farmer to speak on the burning of grasslands - how they benefit agriculture. DNR official - discuss how fauna are not harmed from grassland burning.	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

David Hackbarth
Category: #5 - 2
Man has been a factor affecting plant and animal succession.

Division Science - Senior High
Discipline Introduction to Ecology
Subject Matter Succession

Rationale:
There will be a restoration by nature of man-made disturbances such as fire and erosion.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
The student will identify that after a fire, grasses are the first stage in prairie restoration.	Developmental: Field trip to a burned over prairie and a forest on sand area disturbed by wind erosion.	None
The student will identify a blow-out as a disturbance of succession.	Discussions: Discuss the cause and effects of fire and wind erosion. Also the ways nature recovers from a disturbance caused by fire and/or erosion. Film - Forest On Sand by Encyclopedia Brittanica	

Reference Materials	Ideas for Additional Learning Experience
Publications: Principles of Ecology - Park Audio-Visual: Community:	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

David Hackbarth

Category: #9 - 48

Division Science

Discipline Introduction to Ecology (Sr. High)

Subject Matter Over-population

In any environment, one component like: space, water, air or food may become a limiting factor.

Rationale:

Our limited resources of space, water, air and food can support a limited population of humans in the United States at our present rate of consumption.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
I. A. In groups of four, the students will research and name a local problem caused by over-population. This can be accomplished by house to house surveys, "on the street" interviews, and day to day observations of a problemed area. B. The student group will turn in a pre-plan of their intended project and their anticipated time spent. (Maximum over-all time of two weeks--) One week research - one week presentations. C. The student group will keep accurate and organized data of their project and present their results orally to the class. D. The non-participants will evaluate the reports on the following criteria.	Evaluation: The completion of the evaluative criteria as previously designated. Developmental: Field trips to areas of dense population to observe any detrimental effects of the environment by over-population. Recommended areas would be the Milwaukee area - Kenosha-Racine area. (Sewage treatment and water purification plants.) Motivational: Read The Plaque by Camus. This book will point out mans' inability to recognize his effects upon his environment.	No specific materials needed.

Reference Materials	Ideas for Additional Learning Experience
Publications:	
Audio-Visual:	
Community: City Planner City or County nurse These people can be used during the week of group research to discuss present and possible future limitations of available space, water, air and food. Also any health factors involved, such as TB or mental implications.	

David Hackbarth

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category:

Division Science

Discipline Introduction to Ecology (Sr. High)

Rationale:

Subject Matter Over-population

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
D. Continued 1. The relevancy of the problem - is it presently harming the environment. 2. Organization of the collected data - does it follow a step by step pattern? 3. Accuracy of the data - how was it obtained? Were there actual observations or just "hear say." 4. Proof - if it is possible, collections should be made and used to document the data. Such as in the case of polluted water - samples could be obtained.		

Reference Materials	Ideas for Additional Learning Experience
Publications: Audio-Visual: Community:	

SCIENCE

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Floyd R. Henschel

Category: #1 Man and His Environment

Concept #1 - Living things are interdependent with one another and their environment.

Division Science

Discipline Public School (JHS)

Subject Matter The Nitrogen Cycle

Rationale:

To show the relationship between soil bacteria, leguminous plants, and atmospheric nitrogen and to make students aware why this symbiotic relationship should be preserved so the cycle will continue to enrich the soil.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Cognitive:	Motivational:	
A. The student shall be able to construct a nitrogen cycle diagram and state the simple functions of: 1. Nitrogen-fixing bacteria, (N_2 - NO_3). 2. Denitrifying bacteria, (NO_3 - N_2). 3. Putrefying bacteria, (decomposers).	A. Show the filmstrip, "Helpful Soil Bacteria," to illustrate bacterial activity and their usefulness to man's environment.	A. Filmstrip, "Helpful Soil Bacteria" (Popular Science Production)
	B. Lecture and Discussion: 1. Are there environmental dangers to nitrogen-fixing bacteria? (Misuse of strong chemicals on farm soils). 2. Does the nutrient protein contain nitrogen? Example, available nitrogen necessary for protein synthesis) 3. Why is nitrogen necessary for all living organisms? (For the production of amino acids:Ex: Cystine,$C_6 H_{12} N_2 O_4 S_2$).	B. Filmstrip projector.
B. The student will be able to identify nitrogen-fixing plants such as peas, clover, beans, and alfalfa in the farmer's fields.	C. Bring leguminous plants into the classroom to allow students to investigate the nodules.	
C. The student shall state the simple functions of nitrogen in the soil. For example, to produce crops rich in protein, as alfalfa and clover.	Evaluative: A. Students must be able to visually identify two examples of leguminous plants during a laboratory quiz. B. Written test will be given to determine if instructional objectives were attained.	

Reference Materials	Ideas for Additional Learning Experience
Publications: Concepts of Ecology by E. J. Kormondy Concepts of Modern Biology Series, 1969, pp 209 Prentice-Hall, Inc., Englewood Cliffs, N. J. (An excellent teacher reference source.) Audio-Visual: Community:	Extra-credit report for interested students. Topic: Crop Rotation Question: Explain why crop rotation is an excellent farming procedure.

Floyd R. Henschel

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Division Science

Discipline Public School (JHS)

Subject Matter Air Pollution

Category: #1 - 5
Modern man affects the structure of his environment.

Rationale:
To investigate air pollution with a simple demonstration, using an automobile in the school parking lot to better relate the significance of the problem.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Cognitive: I. Describe, orally, what is meant by air pollution. 2. Describe in written form, ways that air is polluted. 3. List orally, air pollution problems in the neighborhood where the student lives. 4. Name in written form, possible solutions to the neighborhood air pollution problem. 5. Since the student knows some of the causes of air pollution, ask him to list how his family can help with this problem.	Motivational: I. View and discuss film on air pollution Air Pollution Developmental: I. Discuss in class what is meant by air pollution. a. Is it man-made or natural or both? b. What does it do to living things? c. To non-living things? d. Can it harm you? e. What are some of the pollutants? 2. Take a walking tour of the school area* (*School happens to be located near an industrial area!!) a. Look for open burning, smoke coming from chimneys, smoke coming from industrial chimney stacks, and fumes coming from cars. 3. Take the class to the school parking lot. Place a cloth over the tailpipe of an auto and start the engine. Allow the engine to run two minutes and then stop. Carefully remove the wired on piece of cloth after the tailpipe has cooled. Examine the cloth. Evaluative: A short quiz to see if the objectives were attained.	16mm film projector Small square of durable cloth (4" x 4") One piece of wire six inches in length to attach cloth to tailpipe.

Reference Materials

Publications:

Air Pollution
by Charles W. Lavaroni, Patrick O'Donnell
Addison-Wesley Publishing Company, Inc.
Reading, Massachusetts - 1971

Audio-Visual:

0678 - Air Pollution (color) 11 minutes - $4.00
BAVI
1327 University Avenue
Post Office Box 2093
Madison, Wisconsin 53701

Community:

Ideas for Additional Learning Experience

Report Assignment:

1. Define the following air pollutants as to the origin:
    - a. Sulfur oxide
    - b. Carbon monoxide
    - c. Nitrogen oxides
    - d. Hydrocarbons
2. Compare the difference in air pollution between two large cities:
    - a. Los Angeles, California
    - b. London, England

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VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category: #3 - 44

Safe waste disposal, including the reduction of harmful and cumulative effects of various solids, liquids, gases, radioactive wastes, and heat, is important if the well being of man and the environment is to be preserved.

Rationale: As future citizens students should be aware of proper handling of waste waters in their own community.

Division Science

Discipline Public School (JHS)

Subject Matter Sewage Treatment

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Cognitive: A. Each student will prepare a drawing (a flowsheet) which will explain the basic system used to treat their wastes. 1. City dwellers - (primary, secondary, or septic systems) 2. Rural dwellers - (septic tank or no treatment) B. All drawings will be labeled properly with an attached explanation stating how the treatment system functions. C. The students will be able to rate systems comparing efficiency and costs.	Motivational: A. Show and discuss the filmstrip "Water" which explains how water is polluted and how man must attempt to eliminate this environmental hazard. B. Field Trip - to the local sewage treatment plant to have the students observe how human wastes, industrial wastes, and natural wastes (runoff waters in sewers) are treated. Developmental: A. Discussion and lecture covering: 1. Sewer Systems (combined and separate) 2. Sewage Treatment Plants (primary, secondary, and tertiary) 3. Other Systems (lagoons and septic tanks) B. Efficiencies and costs of each system. Evaluative: A. Flow sheets and explanations will be graded and returned to students.	Filmstrip projector.

Reference Materials	Ideas for Additional Learning Experience
Publications:	Extra credit reports 1. Report on one of the following specific tertiary treatment systems: a. Coagulation - sedimentation b. Activated charcoal c. Electrodialysis
Audio-Visual: Filmstrip - "Water" - Produced by N.E.A.	
Community: A brief talk by a cooperating water treatment plant superintendent during the field trip tour.	

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VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category: #1 - 7
Man has ability to manipulate and change his environment.

Division Science
Discipline Public School (JHS)
Subject Matter Herbicides

Rationale:
Herbicides are available to kill or prevent growth of undesirable plants. Students should be aware of how they can be used without being detrimental to their environment.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Cognitive: A. The students will be able to list all weather conditions necessary before the application of a pesticide can take place. B. The student will demonstrate correct handling of a herbicide (2, 4-D) when applying it to an experimental area of a mature lawn. The demonstration should include: 1. Using correct dosages. 2. Taking care not to have excessive spilling. 3. Washing out spraying containers thoroughly. 4. Washing hands when the job is completed. 5. Use of protective clothing, etc. where necessary. C. The student will be able to identify three environmental hazards that can result from improper handling, such as, 1. Indiscriminate spraying of roadsides or fence rows destroys wildlife habitat.	Motivational: A. Show and discuss the film "Pesticides in Focus" to illustrate the production and correct use of pesticides. B. Field Trip - Take the students to a mature lawn that has been infested with an abundance of plantain, an undesirable lawn weed. When they return to school show colored 35mm slides of what does happen to a lawn where the plantain was allowed to grow. C. Treat an experimental area of the lawn with an application of the herbicides (2, 4-D) and return to the area one week later. Developmental: A. Discussion and lecture: Cover the film vary carefully and answer two basic questions: 1. Are herbicides helpful or harmful to man? 2. What are the environmental hazards when pesticides are used? Evaluative: A. The instructor will determine whether the behavioral objectives were achieved through use of a written test.	Bottle of 2, 4-D Liquid Sprayer 16 mm projector

Reference Materials	Ideas for Additional Learning Experience
Publications: Audio-Visual: "Pesticides in Focus" Shell Oil Company Community: Extend an invitation to the Green Giant Company (located in Beaver Dam) to have an authority speak to the students on the usage of pesticides on foods (sweet corn and peas) that we consume.	Extra-credit assignment: 1. Write a report concerning the removal of D. D. T. from public usage in Wisconsin. 2. Discuss the issue of "selective" pesticides. 3. Answer the question, in some detail, "How effective are biological controls in preventing insect damage to crops?"

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Floyd R. Henschel

Category: #3 Water

Concept #64 Water supplies, both in quantity and quality are important to all levels of living.

Division Science

Discipline Public School (JHS)

Subject Matter A test for Dissolved Oxygen in Water

Rationale:

To have the student learn the procedure to test for DO in different samples of water to see if it can support life and to help the student determine why some rivers no longer contain fish life.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Psychomotor: A. The student will go to a stream, river, and lake to obtain water samples to perform the DO tests. Cognitive: A. The student will demonstrate how to use the Hach kit to test for the amount of dissolved oxygen in different water samples B. The student will report the results after performing the Hach kit tests for tabulation.	Motivational: A. The student will come into lab and observe a dead fish (minnow or goldfish) in an aquarium half-filled with water. B. The student will state several variables to answer the question why the fish died. Developmental: A. Discussion 1. List the properties of oxygen. 2. All living things need oxygen. Fish need oxygen to live. 3. In water the oxygen is dissolved and referred to as "DO". Dissolved oxygen is very important for fish to survive in streams, rivers and lakes. B. The instructor demonstrates the step by step procedure in using the Hach kit to test for DO in two different water samples. Evaluative: A. The student must report orally to the instructor the necessary procedures to perform the Hach kit test before he	Hach kit and chemicals. Water sample bottlees.

Reference Materials

Publications:

Methods for collection and Analysis of Water Samples
Geological Survey
Water Supply Paper 1454
U. S. Department of Interior
1960, 300 pp. $1.50

Rainwater, F. H. and Thacher, L. L.
(teacher reference source)

Audio-Visual:

The Hach Kit can be purchased from:

Hach Chemical Co.,
Box 907
Ames, Iowa 50010 Cost approximately $30.00

Community:

Ideas for Additional Learning Experience

Assignment:

Extra credit reports on the following topics:

1. What variables affect the quantity of oxygen in water and how can they be determined?
2. In what way does water pollution affect wildlife species?

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category:

Division Science

Discipline Public School (JHS)

Rationale:

Subject Matter A test for Dissolved Oxygen in Water

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
	Evaluative Continued begins the laboratory exercise. B. The student will define ppm(after he completes the lab exercise)to the instructor.	

Reference Materials	Ideas for Additional Learning Experience
Publications: Audio-Visual: Community:	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Floyd R. Henschel
Category: #3 Water

Division Science

Discipline Public School (JHS)

Subject Matter Wasting Water

Concept #66 Water is a reusable and transient resource, but the available quantity may be reduced or quality impaired.

Rationale:

The continuous running of bubblers sends clean, usable water into the sewers. The student will be aware of how much water is wasted and how costly this situation really is.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Cognitive A. The student will be able to compute by calculation the volume of water wasted and the cost of the water wasted because a bubbler is allowed to run continuously. B. The student will be able to demonstrate how a water bill is computed.	**Motivational** A. Teacher demonstration - slowly turn on the faucet and allow it to fill a graduated container and overflow. While this is happening write the following question on the blackboard - How many gallons of water does a running faucet waste in 24 hours? Turn off the faucet and relate this demonstration to buildings where bubblers are kept running as a cool stream of water is available for people to drink. **Developmental** A. Illustrate to the class, using the blackboard, a typical problem where water was wasted at a rate of 1.5 gallons per minute through the running of a water bubbler (X = 1.5 gallons) $\frac{60\text{ minutes}}{1\text{ hour}} \times \frac{X\text{ gallons}}{1\text{ minute}} = X$ gallons per hour $\frac{60\text{ minutes}}{1\text{ hour}} \times \frac{1.5\text{ gallons}}{1\text{ minute}} =$ 90 gallons per hour $\frac{24\text{ hour}}{1\text{ day}} \times \frac{90\text{ gallons}}{1\text{ hour}} =$ 2160 gal. per day	

Reference Materials	Ideas for Additional Learning Experience
Publications:	The students will be asked to relate this type of problem with their own home situation in the area of leaky faucets. They will have the basic mathematics necessary to calculate the loss of water within their home if they observe one or more leaky faucets instead of running bubblers.
Audio-Visual:	
Community:	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category:

Division Science

Discipline Public School (JHS)

Rationale:

Subject Matter Wasting Water

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
	A. Cont'd. *It has been observed that these bubblers run continuously for 24 hours. This may not always be true in all buildings. *$\frac{\text{2160 gallons per day}}{\text{7.5 gallons per cu.ft}}$ = 288 cu ft. per day B. Water in town Z costs 40¢ per 100 cubic feet. Determine the cost of water wasted per day, as well as, per year under these circumstances. * * In some communities the sewage cost is included with the water rate and therefore may run their water bill higher than the 40¢ per cubic feet used in this problem. Evaluative A. The student will be tested on two water wasting situations to determine how well they understand the mathematical calculations.	

Reference Materials	Ideas for Additional Learning Experience
Publications:	
Audio-Visual:	
Community:	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Floyd R. Henschel

Category: #6 Who Me? Man Shapes His Environment.

Division Science

Concept 101: Family planning and the limiting of family size are important if over-population is to be avoided and a reasonable standard of living assured for successive generations.

Discipline Public School (JHS)

Subject Matter Population

Rationale:

The students will perform a simple newspaper survey to make them aware of population statistics in their community assuming immigration and emigration is fairly stable.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Psychomotor A. The students will construct a bar graph to illustate monthly data concerning the births and deaths in their community.	Motivational: A. Show and discuss the film, The Tragedy of the Commons	16mm film projector Graph paper Rulers
B. The students will utilize this data in predicting long-term population growth for their community for one year, ten years, fifty years and one hundred years to better analyze population predictions.	Developmental: A. In order for students to see a gradual increase or decrease in population, have the students examine the totals of births and deaths from day to day in their daily newspaper for a period of thirty days. B. Have the students record this data on a chart showing the day to day birth and death rates for a total period of thirty days for their community.	
	Evaluation A. Graphs and predictions will be examined to determine the trend of population for their community and whether the objectives have been attained.	

Reference Materials

Publications:

Predicting and Preventing Populations Problems
by Robert J. Trotter

Science News, Volume 100
August 14, 1971

Audio-Visual:

The Tragedy of the Commons
Available through BAVI's catalog
Madison, Wisconsin

Community:

Ideas for Additional Learning Experience

Extra Credit Assignment:

1. Discuss the Malthusian theory of population and food growth.
2. Does this theory have any truth in it according to modern predictions and growth?
3. Discuss the variables in population predictions for communities, U. S. A., and the world.

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Floyd R. Henschel
Category: #10 Forests
Concept #76: Green plants are the ultimate sources of food, clothing, shelter, and energy in most societies.

Division Science
Discipline Public School (J.H.S.)
Subject Matter Photosynthesis

Rationale:

Photosynthesis is the process by which sugars are made when carbon dioxide and water combine in the presence of chlorophyll and sunlight. What becomes of the sugars that are produced in the leaves of green plants?

Instructional Objectives
Cognitive, Affective, Psychomotor

Cognitive:

A. The student will be able to write out the simplified photosynthetic equation.

B. The student will be able to explain orally the light-absorbing pigments contained in the green leaves.

Psychomotor:

A. The student will perform the iodine test for starch on several foods, such as, bread, soda cracker, potato, and boiled geranium leaves.

Affective:

A. The student will develop the idea that producers upon which we (consumers) are dependent are part of the ultimate biological reaction for the biological world obtaining energy.

Recommended Learning Activities
Motivational, Developmental, Evaluative

Motivational:

A. Teacher demonstration:
Remove a leaf from a geranium plant and place the leaf in a beaker ½ full of alcohol. Set the beaker in a pan of H_2O and place the pan on a hot plate. Bring the water to a slow boil and allow it to boil for five minutes, or until the green coloring matter has been removed from the leaf. Use a tweezers to remove the leaf from the alcohol. Put two drops of iodine on the leaf.

Developmental:

A. Discuss the chemist's way of expressing photosynthesis by way of a chemical equation and relate it to the word equation:

1. $6CO_2 + 6H_2O \xrightarrow{\text{light}} \text{chlorophyll} \; C_6H_{12}O_6 + 6O_2\uparrow$

2. Six molecules of carbon dioxide plus six molecules of water will yield in the presence of light and chlorophyll: one molecule of glucose, plus six molecules of oxygen given off as a gas.

B. This gas given off in this reaction called oxygen is essential to all living things indicating to the student that green plants are an important part of the "total" environment.

Classroom
Instructional Materials

Alcohol

Tincture of iodine

Geranium plant

Pyrex beakers

Hot plate

Tweezers

Eye droppers

Reference Materials	Ideas for Additional Learning Experience
Publications:	Caution: Extreme care should be taken not to heat the alcohol container with an open flame. Use a hot plate and a water bath, not the Bunsen burner. Extra Credit Assignment: 1. Compare, and explain on paper, the difference between photosynthesis and animal respiration.
Audio-Visual:	2. Explain the rationale behind the statement, "Have you thanked a green plant today?"
Community:	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category:

Division Science

Discipline Public School (J.H.S.)

Subject Matter Photosynthesis

Rationale:

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
	Devlopmental (Continued) C. Discuss the fact that the iodine test is used as an indicator of the presence of starch when it turns blue-black. Evaluative: A. A written test will be given to determine whether the objectives have been attained.	

Reference Materials	Ideas for Additional Learning Experience
Publications: Audio-Visual: Community:	

Floyd R. Henschel

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category: #12 - 45
Pollutants and contaminants are produced by natural and man-made processes.

Division Science
Discipline Public School (JHS)
Subject Matter Solid Waste Disposal

Rationale:
As future voting citizens, the students should be aware of their community's solid waste program, where it is located and the costs involved to operate the program.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Cognitive: 1. The student will be able to illustrate methods used in disposing of solid waste. 2. The student will explain orally how solid waste is disposed of at his school and in his community. 3. The student will identify solid waste disposal problems that face his school and local community. 4. The student will explain and give a specific example of each of the following terms: a. Solid waste b. Sanitary landfill c. Incinerator d. Compactor e. Recycling f. Composting 5. Describe in writing the ordinances governing the disposal and recycling of solid waste in his community.	Motivational: 1. As an introduction to solid waste, view and discuss in the classroom a film on solid waste disposal - THE THIRD POLLUTION. Developmental: 1. After viewing and discussing the film, make a list of questions that would answer the solid waste disposal program in your community. For example: a. What type of disposal sites are available in your community? b. How is the solid waste material transported from its source to the disposal site? c. What are some of the problems that your community faces concerning the diposal of solid wastes? 2. Take a field trip to become familiar with the type of operation of the disposal system available in your community. Let the students ask the caretaker the following questions: a. How costly is the operation of the facility? b. What are the advantages and disadvantages of the facility used? c. What are the future plans for improvement and available sites?	16mm film projector

Reference Materials

Publications:

Conserving American Resources
Ruben L. Parson
Prentice-Hall, Inc.
Englewood Cliffs, NJ
Copyright, 1972 - 608 pp.

Excellent teacher reference.

Audio-Visual:

The Third Pollution film is available from:
Stuart Finley, Inc.,
3428 Mansfield Road
Falls Church, Virginia 22041

Community:

Make arrangements with the solid waste disposal sites caretaker for a student field trip.

Make transportation arrangements with bus director.

Ideas for Additional Learning Experience

Report Assignments:

1. Explain any two of the following programs that help to remove solid wastes from the environment:
    a. A glass recycling program.
    b. An aluminum can recycling program.
    c. A paper recycling program.
    d. Developing a compost pile at home.

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

LaRon Mischock
Category: #1 - Man and His Environment
Concept #5 Modern man affects the structure of his environment.

Division	Life Sciences	
Discipline	General Science and Biology	Geology
Subject Matter	Life Cycle of: the Lake Fly the May fly	Lakes

Rationale:
Mismanagement of land causes silting. Man-made dike-like structures increase the rate of silting of lakes and streams. This will produce changes in population densities of aquatic life affecting food chains as well as speeding up the aging of the lake.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
The student should be able to select from a series of drawings, diagrams, and/or photos the lakes, or locations in the lakes where similar silting is likely to occur if man constructs dike-like structures in or across the lake or parts of the lake.	Motivational: Show slides of dense masses of lake flies, also show slides of great numbers of fishing boats in the same area of Lake Butte Des Mortes.	Teacher prepared diagrams or maps (of lake in teacher's locality) where man's activities have caused or encouraged silting.
The student will be able to state that changes in the lake caused by man-made structures cause a change in animal populations. He will cite the lake fly or May fly population as an example.	Developmental: Discuss the life cycle of the lake fly. Point out the need for silt type of bottom in the lake similar to that deposited west of the bridge crossing Lake Butte Des Mortes.	Topographic maps of Lake Butte Des Mortes.
	Discuss the life cycle of the May fly. Point out the setback that silt in the water will give the May fly.	Aerial photos of local lakes of Lake Butte Des Mortes.
The student should be able to point out the effect of an increase or decrease of the aquatic population due to insect immaturity on the local food chains.	Discuss the implication of the increase or decrease in the population of these two insects on other animal population in lakes and streams.	Slides: Teacher produced or contact: L. Mischock R. R. #1, Box 272A Sheboygan Falls, Wis. 53085
	Explain that the load (suspended material in water) carrying capacity of water increases with the rate of flow. Anything reducing the rate of flow or movement of the water will encourage and speed up the settling out of the suspended material or silt. The long dike embankments leading up to the bridge on Lake Buttes Des Mortes are an example causing slowing of the movement of water over large areas of the	

Reference Materials	Ideas for Additional Learning Experience
Publications:	Through the use of a working model of stream table, have students observe deposits formed from load carrying movement of water when encountering dike-like type structure.
Audio-Visual:	
Community: Field trip to a lake similar to Lake Butte des Mortes. (Shallow lake with river entering and exiting at opposite ends. Man-made structure crossing lake near middle or near outlet and serving as a dike over great part of the lake.	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category:

Division Life Sciences

Discipline General Science & Biology | Geology

Rationale:

Subject Matter Life Cycle of: The Lake Fly The May Fly | Lakes

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
	Developmental (Continued) lake. It also protects larger areas of the lake from direct wind, therefore encouraging more silting. Evaluative: The student is expected to meet the instructional objectives as exhibited on a written (or oral) exam.	

Reference Materials	Ideas for Additional Learning Experience
Publications:	
Audio-Visual:	
Community:	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Kenneth Vertein
Category: #1 - Concept 1
Living things are interdependent with one another and their environment.

Division Jr. High

Discipline Science

Subject Matter The Process of Photosynthesis

Rationale:
Certain variables affect the process of photosynthesis and it is important for man to know these variables because of the predicted scarcity of food for the total population.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
1. The students will be able to use chemical symbols and terms while listing the raw materials used, and the products produced as a result of photosynthesis.	Motivational: 1. Film "Photosynthesis" from the local CESA Agency (This film generates some thought regarding various environments where photosynthesis takes place). 2. Filmstrip, "Food Making, Nature's Process," (This generates interest regarding experiments involving photosynthesis)	Filmstrip Projector Film Film and Filmstrip Sealed glass containers
2. The students will be able to identify several areas in the community where photosynthesis affects the environment as food is produced for a mass of people, or on an agricultural basis.	Developmental: 1. Drawing photosynthesis charts to show the materials used and how the process functions.	Science Texts Encyclopedias
3. The students will be able to describe several conditions within the community that affect the process of photosynthesis as it is involved with the production of food on an agricultural basis, such as sprays used, or quality of soil.	2. Experiments, a. Two mice, one in a sealed container with plants, the other with no plants, (also in a sealed container) - the mouse with plants should live longer because of the production of oxygen by the plants. b. One container with plants placed in sunlight, and another container with plants placed in darkness and check for a change in appearance and the production of food. (The plant in the sunlight would continue to stay green - the other would turn yellow because of lack of sunlight) Also test for starch in leaves of both plants.	Plants Mice

Reference Materials	Ideas for Additional Learning Experience
Publications:	Develop several food pyramids, one of which would include man. The students could relate their experiences with the community to other places in the United States and throughout the world involving photosynthesis and the production of food on an agricultural basis. Several students could give oral reports on the process of photosynthesis.
Audio-Visual: You could use a transparency on photosynthesis (with overhead).	
Community:	

Category:

Division Jr. High

Discipline Science

Rationale:

Subject Matter The Process of Photosynthesis

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
	(Continued) Evaluative: 1. The students should perform in writing the completion of the three written objectives.	

Reference Materials	Ideas for Additional Learning Experience
Publications:	
Audio-Visual:	
Community:	

SOCIAL SCIENCE

Allen Barkoff, Bill
Kilgour, Beverly Gold

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Division General Studies

Discipline General Biology, Social Science, Home Management

Subject Matter Resource Management
Land Use
Decision Making

Category: #12-98 Policies, including natural resource policies, came about as the result of interacting social processes: science and technology, government operations, private interests, and public attitudes.

Rationale: Students need to understand this concept because good environmental decisions require experience in compromise, ability to deal with divergent pressures, perspective on environmental conflicts, and ability to communicate with other people.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Cognitive: 1. In the company of 4 other students when given a specific complex of natural resources TSSBAT design and evaluate 5 alternative land use patterns. 2. In this group TSSBAT advocate the pattern which he considers best and challenge the "common sense" of other plans. Affective: In order to show their concern about land use the student should attend at least one public hearing during the semester in their community concerning a specific land use problem.	Motivational - Development: Directions for activity The students will be given the attached sheet and be divided into groups of 5 students each. They will be given 30 minutes to formulate a land use policy which is acceptable to a majority of the group, after which one member of each group will present their land use policy. Discussion of the various land use policies will follow. Evaluative: The students will write an essay exam demonstrating that he has met the aforesaid instructional objectives.	Copy of simulation attached.

Reference Materials	Ideas for Additional Learning Experience
Publications:	
Audio-Visual:	
Community:	

Allen Barkoff
Bill Kilgour
Beverly Gold

A SIMULATION

WEDGEWOOD ISLAND

You are a member of a group of 5 people who have, as a group, inherited an island which is very rich in resourses. This island is fifty miles off the shores of Lake Michigan and has the following characteristics:

1. Completely untouched by human civilization.
2. It is the kind of land which most people consider beautiful and scenic.
3. Virgin timber of high market value including Black Walnut, American Chestnut, Butternut, Oak and Hickory.
4. Fields of rare flowers including Dwarf Lake Iris overlying high grade copper ore.
5. There are enough plants and animals on the island to maintain a nutritious diet for at least 75 people living off the land.
6. Many flowing springs feeding a fast flowing river.
7. High grade petroleum deposits have been confirmed.
8. Very fertile prairie type soil of about 500 tillable acres.
9. Total area - 3 square miles.

You, as heirs, will be notified of your inheritance in July of 1973. Therefore, you must work within the present economic and social values. No government has control of this group or will impose their policies upon this island.

You will soon be meeting with the other new owners of this island.

You are now to make whatever decisions are necessary for the best managment of the island.

After the groups have been meeting for 10 minutes or so, several pre-selected students will circulate among the groups offering to buy the island. Each buyer will have a printed description of his position; e.g. prepared to buy the island for a Playboy Club, or copper mine plus smelter (away from habitation for safety), etc.

Possible decision which you might like to consider:

1. Divide the land into separately owned parcels.
2. Own land collectively.
3. Sell mineral rights.
4. Mine yourself.
5. Lease to outsiders.
6. Set population policy.
7. Zone land.

Marjorie Czekala
Nancy Neumeyer

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category: #1 - 7

Man has the ability to manipulate and change the environment.

Division Intermediate Grades 4-6
Discipline Social Science
Subject Matter Land Erosion

Rationale:

Poor land use along the banks of streams promotes flooding, erosion, and siltation; therefore, steps must be taken to prevent destruction along the banks of streams.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
1. After being shown a picture of a badly eroded stream bank, the student will be able to list three methods that could prevent soil erosion and explain how each method prevents erosion and flooding. 2. The student will locate one place in the community where bank erosion has occurred and explain the cause of the erosion.	Motivational: 1. View filmstrip "Soil Conservation Today" which demonstrates the relationship between plants, animals, and erosion. 2. Class field trip to stream in community where soil erosion has taken place because natural vegetation has been removed. Developmental: 1. Discussion of reasons for erosion of stream banks: a. Natural vegetation gone because of overgrazing b. Cutting down of too many trees, or c. Lack of ground cover 2. Discussion of ways the stream banks can be improved to prevent flooding, such as seeding banks with grass, planting trees, keeping cattle from grazing near the stream banks, use of rip-rapping, and how each of these methods prevent soil erosion. Evaluative: Instructor will determine whether objective has been obtained.	1. Picture of eroded stream bank. 2. Filmstrip: Soil Conservation Today (color, sound, SVE, 1963, 38 fr.)

Reference Materials

Publications:

Wisconsin Conservation Bulletin
(March-April, 1969)

Audio-Visual:

Filmstrip: Soil Conservation Today
(Color, sound, SVE, 1963, 38 fr.)

SVE: Society for Visual Education
1345 Diversey Parkway
Chicago, Illinois 60614

Community:

Ideas for Additional Learning Experience

1. Could bring in idea of "Channelization of Streams" by Corps of Engineers which is presently being performed or proposed for several streams and rivers in the United States.

Marjorie Czekala
Nancy Neumeyer

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category: #1 - 7
Man has the ability to manipulate and change the environment.

Division Intermediate Grades 4-6
Discipline Social Sceince
Subject Matter Utilization of Resources

Rationale:

Maintaining an adequate food supply for a growing population with a scarcity of level land can be done by using terracing and contour plowing to prevent erosion.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
1. The student will write a paragraph explaining how soil erosion can be prevented by terracing and contour plowing. He will be able to state that these methods prevent the soil from being washed away by rain and running water by forming horizontal irrigation ditches which maintains good soil at higher elevations. 2. Given a map of Italy, the child will be able to place X's where terracing would be effective and necessary and where one would probably find contour plowing, writing his reason for choosing these locations beneath the map.	Motivational Show a physical map of Italy noting the mountainous land features. Developmental: Read text: Unit 3, Ch. 1, "A Mountain Farm" pp. 121-129 to read of land scarcity problems and farming of this land. Discuss the terracing and contour plowing of this land as a practice which increases land area usable for production of food for increased population, pointing out how these methods prevent washing away of soil. Evaluation The student will write the paragraph and fill in the map, writing his reasons for map choice locations.	1. Physical-political map of Italy. 2. Textbook: *The Social Sciences* by Harcourt, Brace, Jovanovich, Inc., 1970, Unit 3,Ch. 1 3. Ditto outline map of Italy to be prepared by teacher.

Reference Materials	Ideas for Additional Learning Experience
Publications: The Social Sciences by Harcourt, Brace, Jovanovich, Inc. ed. 1970 Audio-Visual: Filmstrips: 1. Natural Resources and New Frontiers (Color, sound, 1966, SVE) 2. Resources and Manufacturing Industries (Color, sound, 1961, SVE) SVE: Society for Visual Education 1345 Diversey Pkwy. Chicago, Ill. 60614 Community:	

Marjorie Czekala
Nancy Neumeyer

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category: #1 - 12
Environmental management has effects on individual and social institutions.

Division Intermediate Grades 4-6
Discipline Social Science
Subject Matter Library

Rationale: Since environmental problems present some of the main sources of concern in today's society, students should become aware of the problems through reading. Therefore, we should have a shelf in our library devoted to books on environmental problems.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
1. The students will identify at least 35 books and 5 magazines in the school library that pertain to environmental problems and assist librarian in arranging them as a special "environmental" shelf. 2. The students will select a list of 10 books and three magazines to be ordered for the library for the following school year.	Motivational: Class will go to the school library and look for books, magazines, and pamphlets that deal with environmental problems. They can use the card catalog. Development: 1. Discussion of environmental material found in library. 2. Discussion of material that should be added - areas of environmental problems that the library is lacking. 3. Present a bibliography of books and magazines and have children select some that they think should be ordered for library - on the topics of air pollution, water pollution, and population explosion. Evaluative: Instructor will determine whether objectives have been obtained.	School library and catalog. Bibliography: Environmental Education for Everyone - A Bibliography of Curriculum Materials for Environmental Studies

Reference Materials	Ideas for Additional Learning Experience
Publications: Environmental Education for Everyone - A Bibliography of Curriculum Materials for Environmental Studies Washington, D. C.: N. E. A. Publication Sales. Stock Number 471-14600. $0.75	1. Take field trip to city library to find environmental material and request city librarian to set up special shelf with these materials. 2. Each student will contribute 25¢ apiece to purchase one book on environment to donate to the school library.
Audio-Visual:	
Community:	

Nancy Neumeyer
Marjorie Czekala

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category: #1 - 45
Pollutants and contaminants are produced by natural and man-made processes.

Division Intermediate Grades 4,5,6

Discipline Social Science

Subject Matter Pollution of Public Property

Rationale:
To make the student aware that everyone is a polluter - therefore it is each one's responsibility to help clean up his own environment.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
1. The class will develop an awareness of their part in polluting the school ground by picking up all the paper on the school ground once a week for a month. 2. The class will make a bulletin board displaying the candy and gum wrappers, etc., they picked up on the school yard. 3. The student will design and make individual "stop pollution" posters to display in school hallways.	Motivational 1. Show magazine pictures depicting clean outdoor environments in contrast to magazine pictures of polluted outdoor environments. 2. Have students check their desks for waste paper. Developmental: 1. Discuss the contrast of the clean vs the polluted outdoor environment to elicit the idea that each person that throws paper, cans, etc. is contributing to outdoor pollution. 2. View film, "The Meaning of Conservation" which describes problems of maintaining the natural beauty of the land. Evaluative: Class will clean up the school yard and prepare bulletin board with the polluting material they find, followed by making of posters for display.	1. Magazine pictures of clean and polluted outdoor environments found by teacher. 2. Film: The Meaning of Conservation (Color, 11 min., Coronet, 1954)

Reference Materials

Publications:

Possible magazine sources for pictures of outdoor environments:

Wisconsin Tales and Trails
Better Homes and Gardens
Times
Newsweek
McCall
Ladies Home Journal

Audio-Visual:

Film: The Meaning of Conservation
(Color, 11 min. Coronet, 1954)

Address: Coronet Instructional Films
Educational Services
65 E. South Water Street
Chicago, Illinois 60601

Community:

Ideas for Additional Learning Experience

1. The class could go to the city park to clean up litter.

Marjorie Czekala
Nancy Neumeyer

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category: #3 - 35

Division Intermediate Grades 4-6
Discipline Social Science
Subject Matter Water Conservation

Consumption practices are constantly being expanded by our ability to produce and create wants and market, which affects the rate of resource use.

Rationale:

Due to the tremendous demand for water in our society today care should be taken, by each individual, to conserve this precious resource.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
1. From the school bubbler which runs continuously, the student will measure the amount of water that runs in one minute and compute how much water this would be in one day, one month, and one year. 2. To demonstrate awareness of how much water could be saved by turning bubbler off, the students will write a petition to the school principal requesting the bubblers be turned off except when in use. 3. The student will list five ways in which he could save water in his home.	Motivational: View filmstrip, "Water Conservation Today" which is an account of the critical problems of water pollution and conservation. Developmental: 1. Discussion of the importance of water to each person - bring out the many uses of water in the home, school, community, etc. 2. Discussion of where water comes from in the home and school and community and why we need to conserve water because of the huge demands for it in our society today. 3. Discussion of how the school can conserve water - with experiment of running bubbler. Evaluative: Instructor will determine whether objectives have been attained.	Filmstrip: Water Conservation Today (Color, sound, SVE, 1963, 35 fr.)

Reference Materials	Ideas for Additional Learning Experience
Publications: Audio-Visual: Filmstrip: Water Conservation Today (color, sound, SVE, 1963, 35 fr.) SVE: Society for Visual Education 1345 Diversey Parkway Chicago, Illinois 60614 Community:	

Marjorie Czekala
Nancy Neumeyer

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Division Intermediate Grades 4-6

Discipline Social Science

Subject Matter Utilization of Resources

Category: #3 - 68

The amount of precipitation that becomes available for use by man varies with topography, land use, and applied management practices.

Rationale:

To teach the student that the development of dams in dry regions can make unuseable land useable which will be necessary with the increasing demand for food and energy in our expanding population.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
The student will gather information on the reason for building dams in dry areas and write a list of three main uses of these dams which are: a. Control the water supply. b. Permit better distribution of available water for crop irrigation. c. Provide reservoirs to produce hydroelectric power.	Motivational: View filmstrip: The Irrigated Desert: Imperial Valley, which explains how the Imperial Dam on the Colorado River controls irrigation water. Developmental: 1. Read text: Unit 3, Ch. 2, "A Dry Region," pp. 131-141 to learn why dams are needed to regulate water. 2. Discuss reasons for building dams in dry areas. Evaluative: Completion of written list of 3 main uses of dams.	Filmstrip: "The Irrigated Desert," Imperial Valley, ACA, 1966, color, 55 fr.) Textbook: The Social Sciences by Harcourt, Brace Joanovich, Inc., 1970, Unit 3, Ch. 2

Reference Materials	Ideas for Additional Learning Experience
Publications: The Social Sciences: by Harcourt, Brace and Joanovich, Inc. 1970 edition Audio-Visual: Filmstrip: "The Irrigated Desert:" Imperial Valley (color, 55 fr., ACA, 1966) Academy Films Educational Motion Pictures 748 No. Seward Street Hollywood, California 90038 Community:	

Marjorie Czekala
Nancy Neumeyer

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category: #4 - 46

Division Intermediate Grades 4,5,6
Discipline Social Science
Subject Matter Pollution of Environment

Increasing human population, rising levels of living and the resultant demands for greater industrial and agricultural productivity promotes increasing environmental contamination.

Rationale:

In order to cut down on the amount of garbage accumlating in our country, tin cans and glass bottles can be collected by the student to be recycled as these items are difficult to dispose of; and as our population increases more and more garbage is piling up.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
The student will demonstrate his awareness that pollution can be controlled, by collecting the tin cans and glass bottles used in his house for two weeks and bringing them to school to be turned in to the community recycling center. Cognitive: To become aware of the great volume of garbage the student will compute the weight of this waste, for his family, for one week. Then compute how much this would be for all families in community.	Motivational: Class trip to city dump to see the tremendous accumulation of cans and bottles. Developmental: 1. Discussion of trip to dump to develop realization on part of students that a. Since cans and bottles don't disintegrate they keep accumulating at a tremendous pace. b. That if each person would separate cans and bottles from rest of trash the materials can be recycled into other usable items. 2. View filmstrip: Man's Natural Environment: Crisis Through Abuse, Pts. I and II, which presents problems of our contaminated environment and what individuals, organizations, and government can and are doing to solve pollution problems and save the environment. Evaluative: Instructor will determine whether objectives have been obtained.	Filmstrip: Man's Natural Environment: Crisis Through Abuse, Pts. I and II (Color, 2 sound filmstrips, Guidance, 1970, Pt. I, 94 fr.;) Pt.II, 72 fr.)

Reference Materials	Ideas for Additional Learning Experience
Publications:	The student could conduct a neighborhood collection of bottles and cans.
Audio-Visual:	
Filmstrip: Man's Natural Environment: Crisis Through Abuse. Pt. I and II. (2 sound filmstrips, color, Guidance, 1970) Pt. I, 94 fr.; Pt. II, 72 fr.)	
Address: Guidance Associates Pleasantville, New York 10570	
Community:	

Nancy Neumeyer
Marjory Czekala

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category: #6 - 11

Resource depletion can be slowed by the development of alternatives.

Division Intermediate Grades 4,5,6

Discipline Social Science

Subject Matter Utilization of Resources

Rationale:

To prevent the waste of trees, paper can be recycled.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
Affective: The student will demonstrate his awareness of the importance of recycling paper by saving all the newspapers that come to his house for one month and bringing them to school to be turned in to a recycling center. Cognitive: The student will write a paragraph that explains how his saving of paper, to be recycled, will save our trees.	Motivational: Filmstrip: "Forest Conservation Today" which describes the value of existing forests. Developmental: 1. Use encyclopedia to read about the process of making paper from trees. 2. The student will use the encyclopedia to discover how many cords of wood are needed to make one ton of paper. 3. Then discussion of: a. How paper can be collected and reused and how this method will save trees. b. Discussion to elicit the idea that each person that saves paper is actually saving our forests and the more people that save paper the more trees that are saved. Evaluative: The student will collect the newspapers that come to his home for one month and bring them to school to be turned in to a recycling center, and write the paragraph.	Filmstrip: "Forest Conservation Today" SVE, 1963, color, 42FR Encyclopedia: "World Book". 1970

Reference Materials	Ideas for Additional Learning Experience
Publications: World Book Encyclopedia, 1970 Audio-Visual: "Forest Conservation Today" (Color, 1963, 42 Frames) SVE Society for Visual Education 1345 Diversey Parkway Chicago, Illinois 60614 Community:	

Mar ie ka
Nancy Neumeyer

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Division Elementary Grades 4-6

Discipline Social Science

Subject Matter Conservation of Wildlife

Category: #9 - 21
Hunting regulations are useful in maintaining and restoring populations as well as in distributing the game harvest.

Rationale:
To make students aware that hunting regulations are important because they control the population of animals, preventing starvation and thus protecting the species.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
1. The student will be able to list two hunting laws and state at least two of the reasons for each law. 2. The student will be able to write on new law to control and protect wildlife, giving at least two justifications in writing as to why they feel this law should be established.	Motivational: View filmstrip: Wildlife Conservation Today, which analyzes the relationship between man and the wildlife in his environment. Developmental: Discussion of: a. Problems of maintaining stable wildlife populations as man makes changes in the physical environment, such as cutting down of forests which deprives wildlife of cover and food. b. How hunting regulations can help animals by preventing overpopulation which leads to starvation (example-deer herds in Wisconsin.) c. How hunting regulations protect animals from extinction by limiting the number killed by an individual in one year. Evaluative: Instructor will evaluate student papers to determine whether objectives have been obtained.	Filmstrip: Wildlife Conservation Today (color, sound, SVE, 1963, 35 fr._

Reference Materials	Ideas for Additional Learning Experience
Publications: Audio-Visual: **Filmstrip:** Wildlife Conservation Today (Color, sound, SVE, 1963, 35 fr.) SVE: Soceity for Visual Education 1345 Diversey Parkway Chicago, Illinois 60614 Community:	1. Students could bring in articles from magazines dealing with wildlife conservation practices and give an oral summary report of the article to the class.

SOCIAL STUDIES

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Tom Gilson

Category: # 1 - 13

Man's need for food, fiber, and minerals increases as populations expand, and levels of consumption rise.

Division Junior High

Discipline Social Studies

Subject Matter Extra Credit to be done with unit on underdeveloped countries such as India.

Rationale:

In order to understand the misery of people in under-resourced, overpopulated countries, and to see the advantage the students in our country possess, ths student will experience a small feeling of starvation.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
The student will keep a written daily log, indicating the effect of the diet on his normal daily functions	1. Filmstrip "Population Explosion" - New York Times. This shows facts of world population growth. Has many pictures of malnutrition, overcrowding and children scavaging for food.	Filmstrip - "Population Explosion" New York Times
	2. Discussion in class as to how the student might feel, if they were a child in this area.	Posters to adorn room. Obtained from many sources Suggest Scholastic Poster Division posters, should be of poor people starving in very substandard, crowded areas.
	3. Suggested extra credit: The student, with parental help, will agree to spend one full day eating no more than one cup of rice (preferably, wild) and two glasses of water.	
	4. Teacher will collect student logs, and award extra credit.	
	5. Teacher must decide within himself if the project has merit.	

Reference Materials	Ideas for Additional Learning Experience
Publications: Suggested reading for students "This Hungry World" E.S. Helfman, Lothrop, Lee & Shepard Co., N.Y. Good Jr. High level readings, and illustrations **Audio-Visual:** Filmstrip projector Posters **Community:**	

Kenneth V[illegible]ein

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Division Junior High

Discipline Social Studies

Subject Matter Recreational facilities

Category: #4 - 6

Esthetic resources and recreational facilities of economic and non-economic value are becoming increasingly important in leisure-time activities.

Rationale:

It is important to know how man affects the available recreational facilities because the population is increasing and man has more leisure time, thus resulting in more use of these facilities.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
1. The students will be able to list several ways in which our recreational facilities have been affected from overuse. 2. The students will be able to describe several possible solutions to the problem of oversue of our recreational facilities.	Motivational: 1. The teacher should show self-prepared slides of specific places where our recreational facilities have been affected by overuse (no discussion, just view) and this will lead into a group discussion covering some problmes we have with overuse. Developmental: 1. Field trips to recreational facilities to actually view example of overuse and follow this up with classroom discussions. 2. Research work to find and compare the number of people using our National Parks today as compared to several years ago. 3. Resource speakers such as park managers and city planners may speak to the class discussing several possible solutions to the problem of overuse, and incorporate class discussions. Evaluative: The teacher will assess the objectives by having the students complete the objectives in written form.	Slide projector Slides Films from local CESA that would apply to this problem of over-use of our recreational facilities. Textbooks and other reference materials.

Reference Materials	Ideas for Additional Learning Experience
Publications: Textbooks and other reference materials Audio-Visual: Films from Local CESA Agency or BAVI that would apply to this problm of overuse of our recreational facilities. Community:	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Ken Vertein
Category: #5
Concept #2
Man has been a factor affecting plant and animal succession and environmental processes.

Rationale:
It is important to know how man has affected the environment as a result of draining swamps for agricultural purposes because now there are fewer areas available for recreational use.

Division Junior High

Discipline Social Studies

Subject Matter The production of more food has ~~resulted in less~~ land for recreational use.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
1. The students will be able to list the uses of the land before and after the swamps were drained. 2. The students will select articles from reading materials where swamp land was drained and used for agricultural purposes. 3. The students will demonstrate with the use of pictures, slides, etc., areas within the community or state where man has affected the environment by draining swamps and using it to produce food. 4. The students will be able to list several ways this change will have an impact on groups of people not adjacent to the immediate area such as consumers and sportsmen from the larger cities.	Motivational: 1. Two students, prepicked and counseled, perform role playing in front of the class; one sportsman and one farmer, presenting two points of view and this will lead into a class discussion. Developmental: 1. Research work to find and compare number of acres under cultivation today as compared to years ago in individual counties and within the whole state. 2. Resource speakers from county agricultural office and game warden (the changes they have, experiences and their impressions of the impacts of these changes. 3. Field trips to areas where swamp land has been drained and used for agricultural purposes. 4. Drawing charts indicating different types of vegetation in areas before and after the draining of swamps. 5. Reading materials to find information regarding how this event has affected other areas and people away from the immediate area such as soil erosion, food prices, sportsmen, etc.	

Reference Materials	Ideas for Additional Learning Experience
Publications:	The group might have a discussion regarding future plans for draining - whether legislation should be passed prohibiting it, or should it continue. They might discuss available food supply or should the DNR purchase swamp lands for recreational purposes. The students could construct dioramas depicting the swamp area before and after draining.
Audio-Visual: Pictures could be obtained from the County Agricultural Service Committee, or County Forester showing changes brought about by the draining of swamps in the immediate county and other areas in the state.	
Community:	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Category:

Division Junior High

Discipline Social Studies

Rationale:

Subject Matter The production of more food has resulted in less land for recreational use.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
	Evaluative: The teacher will assess the student's performance in writing as they complete the written objectives numbers 1, 3 & 4. The teacher will check each student for the completion of the written objective number 2.	Binoculars. Textbooks, pamphlets and other reference material. Wood casing, soil and vegetation for displays.

Reference Materials	Ideas for Additional Learning Experience
Publications:	
Audio-Visual:	
Community:	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Tom Gilson

Category: #6 - 11

Resource depletion can be slowed by the development and adoption of alternatives.

Division Junior High

Discipline Social Studies

Subject Matter Resources

Rationale:

The student will be made aware that they too are users of resources, and in the case of electronic devices, the students become dependent on these devices. They may find alternate activities in leisure time, that use less resources.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
The students will keep an hourly log of their television viewing time for a one-week period. The following week the students will go without any television viewing, indicating in writing their personal feelings, and listing activities carried out in place of TV viewing.	Students will see overhead transparent charts with graph presentation of U. S. and world energy consumption, past, present, and projected future use. (See Column 3 for sources.) A discussion will follow leading to the students' use of resources and energy, especially electronic items (Example: TV) The student will then be asked to record TV viewing time for 1 week. These will be tabulated and presented to class. Students will be challenged to give up use of television for 1 week, and then write reactions, and alternate activities. Teacher will collect lists and reactions, and evaluate within himself, if the assignment merits success. Students will be given time to discuss any of the projects.	Overhead transparent charts. Suggest sources: 1. Natural Resources for U. S. Growth - Landsberg 2. Conservation of Natural Resources - Smith, "Mineral Fuels", pp. 401-449 3. Environment Resources, Pollution, and Society, W. Murdoch "Energy Resources" pp. 89-117 Log charts for TV viewing time, so that all students use the same format.

Reference Materials	Ideas for Additional Learning Experience
Publications: See page 1, column 3.	The students may extend this assignment to include many electrical devices. Examples: radio, record player, tape recorders, etc. The students might be asked to list the different gadgets in their homes which they feel are unnecessary resource users. Examples might be: electric knife, electric pencil sharpener, etc. There may be a broad variance of student opinion, leading to excellent discussion.
Audio-Visual: Overhead Projector.	
Community:	

VTAE ENVIRONMENTAL CONCEPTS CURRICULUM GUIDE

Thomas Gilson

Category: #7-111

Emotional reactions can be elicited by exposure to physical objects and geometric forms.

Division Junior High

Discipline Social Studies

Subject Matter Environment

Rationale:

To show the students how their emotions may vary when subjected to different physical objects - via slides. This may show students the distinction in physical settings and living area, and subsequent emotional variance.

Instructional Objectives Cognitive, Affective, Psychomotor	Recommended Learning Activities Motivational, Developmental, Evaluative	Classroom Instructional Materials
The student will react in writing immediately after a slide presentation. Suggested criteria might be: Poetry Story Descriptive picture Other forms of written reaction will be acceptable.	1) 7-10 minutes of slides with no discussion or explanation. Example - dumps, landfill sites, auto cemeteries, smog, starving child, etc. 2) 7-10 minutes of slides with no discussion or explanation. Examples - trees, flowers, snow-covered field, etc. Note: #1 & 2 are to be opposites in the view of the teacher. 3) Students will write response for the remainder of class period. 4) Teacher will collect written responses. Suggest no graded evaluation, but teacher must decide within himself whether the responses merit success. 5) Any student may comment in class, to the teacher and class, on the slides and/or the students' emotions, the following class period.	Slides - easily obtained with close-up adaptor, choosing any desired picture from books, magazines or any other source. Involvement of school camera club suggested. Possible help from school audio-visual director. Quick action projector suggested.

Reference Materials	Ideas for Additional Learning Experience
Publications: See Page 1, Column 3	Similar experience, but using sound opposites. Example - tape of cars, industrial noise, gun fire, air hammer - etc. Second part of tape would be treeze, birds singing, children playing, violins, etc. Intermixing opposites within a sound or slide presentation. Example, 1 slide of starving child, the next a table of food. Or, ½ minute of pleasant sounds, ½ minute of noise or harsh sounds, etc.
Audio-Visual: Slide projector with quick flash action.	If equipment is available, a mixture of slides and sound together. Teacher must again choose appropriate material. Students must feel that they may or may not express their reactions to the teacher and/or class orally if they so desire.
Community: Possible slides from school community advisable.	

APPENDICES

APPENDIX A

ENVIRONMENTAL EDUCATION WORKSHOP COMMITTEE - 1973

Dr. Eugene Beck
Project Co-Director
University of Wisconsin
Fond du Lac, Wisconsin 54935
414-922-8440

Mr. Vernon O. Horne, Special Projects
Project Co-Director
Moraine Park Technical Institute
235 North National Avenue
Fond du Lac, Wisconsin 54935
414-922-8611

Dr. Roy Heath, Associate Director of
Grants Administration
University of Wisconsin - Oshkosh
Oshkosh, Wisconsin 54901
414-424-1495

Mr. Doyle E. Beyl, Chairman
Bureau of Research
Professional and Student Development
Wisconsin Board of Vocational,
Technical and Adult Education
Hills Farms State Office Building
4802 Sheboygan Avenue
Madison, Wisconsin 53702
608-266-1354

Dr. Willard Henken, Dean
University of Wisconsin Center - Fond du Lac
Fond du Lac, Wisconsin 54935
414-922-8440

Mr. Roland Krogstad
Vocational Education Consultant, Research
Division of Education Development and
Special Services
Wisconsin Board of Vocational, Technical
and Adult Education
137 East Wilson Street
Madison, Wisconsin 53703
606-266-3705

Dr. Robert S. Pickering
Associate Professor
University of Wisconsin - Oshkosh
Oshkosh, Wisconsin 54901
414-424-3155

Dr. Everette Pyle
Dean of Graduate School
University of Wisconsin - Oshkosh
Oshkosh, Wisconsin 54901
414-235-6220

Mr. Philip Stoll
Assistant to Director
Moraine Park Technical Institute
235 North National Avenue
Fond du Lac, Wisconsin 54935
414-922-8611

Mr. Robert Sorensen
District Director
Moraine Park Technical Institute
235 North National Avenue
Fond du Lac, Wisconsin 54935
414-922-8611

Dr. Paul Taylor
Assistant Professor
University of Wisconsin - Oshkosh
Oshkosh, Wisconsin 54901
414-424-3158

Dr. Leonard Tews
Professor of Biology
University of Wisconsin - Oshkosh
Oshkosh, Wisconsin 54901
414-424-1234 - UW-O switchboard ask for Dr. Tews, or
414-424-5123 - Dr. Tews' office

APPENDIX B

Environmental Education Institute

CO-DIRECTORS

Dr. Eugene J. Beck, Director of Educational Services
University of Wisconsin Center-Fond du Lac
Fond du Lac, WI 54935 1-414-922-8440

Vernon O. Horne, Special Projects Specialist
Moraine Park Technical Institutes
Fond du Lac, WI 54935 1-414-922-8611

INSTRUCTIONAL STAFF

Dr. H. Gene Drecktrah, Assistant Professor of Biology
University of Wisconsin-Oshkosh
Oshkosh, WI 54901

Dr. Robert Pickering, Associate Professor of Education
University of Wisconsin-Oshkosh
Oshkosh, WI 54901

Dr. George R. Schneck, Assistant Professor of Education
University of Wisconsin-Oshkosh
Oshkosh, WI 54901

Dr. Paul Taylor, Assistant Professor of Education
University of Wisconsin-Oshkosh
Oshkosh, WI 54901

Dr. Leonard L. Tews, Associate Professor of Biology
University of Wisconsin-Oshkosh
Oshkosh, WI 54901

RESOURCE PERSONNEL

Dr. Norris Jones, Assistant Professor of Geology
University of Wisconsin-Oshkosh
Oshkosh, WI 54901

Dr. Milton G. Mitchell, Specialist, Environmental Economics
University of Wisconsin-Oshkosh
Oshkosh, WI 54901

Dr. William E. Sloey, Associate Professor of Biology
University of Wisconsin-Oshkosh
Oshkosh, WI 54901

Dr. Frederic L. Spangler, Assistant Professor of English
University of Wisconsin-Oshkosh
Oshkosh, WI 54901

Dr. John R. Tinker, Assistant Professor of Geology
University of Wisconsin Center-Fond du Lac
Fond du Lac, WI 54935

APPENDIX C

ENVIRONMENTAL EDUCATION INSTITUTE - June 11-29, 1973

Resource Personnel

Mr. James Bell, Manager
DNR Horicon Marsh Headquarters
North Palmatory Drive
Horicon, WI 53032

414-485-4434

Schedule: Monday, June 25
10:15 - 11:15 a.m.

Mr. Richard Billings, Director of Environmental Control
Kimberly - Clark Industries
Neenah, WI. 54956
414-729-1212

Schedule: Tuesday, June 26
10:15 - 12:00 p.m.

Mr. Thomas Calobrese, Chief
Private Water Supply
Department of Natural Resources
4610 University Avenue
Madison, WI 53702
608-262-3415

Schedule: Thursday, June 14
1:00 - 2:45 p.m.

Dr. Gordon Cunningham, Associate Professor of Forestry
Russel Laboratories, College of Agriculture & Life Sciences
University of Wisconsin
1630 Linden Drive
Madison, WI 53706
608-262-3357

Schedule: Thursday, June 21
8:30 - 9:45 a.m.

Mr. Russell Daley
Area Headquarters
Department of Natural Resources
905 Bayshore Drive
Oshkosh, WI 54901
414-235-8910
Schedule: Wednesday, June 20
8:30 - 10:00 a.m.

Professor Robert Ellarson
Department of Wildlife Ecology
Russel Laboratories, College of Agriculture & Life Sciences
University of Wisconsin
1630 Linden Drive
Madison, WI 53706
608-262-2671
Schedule: Tuesday, June 19
9:30 - 10:30 a.m.

Mr. David Engleson, Supervisor
Conservation Education
State Department of Public Instruction
Wisconsin Hall
126 Langdon Street
Madison, WI 53702
608-266-3319
Schedule: Monday, June 11
10:45 - 12:00 p.m.

Professor Ellsworth Fisher
Department of Entomology
College of Agriculture
University of Wisconsin
Madison, WI 53702
608-262-3226

Schedule: Monday, June 18
8:30 - 10:00 a.m.

Mr. Richard Hall, Chairman
Conservation Technology
Fox Valley Technical Institute, District #12
Oshkosh, WI 54901
414-235-7780

Schedule: Tuesday, June 26
8:30 - 10:00 a.m.

Mrs. Lucille Johnson, President
Fond du Lac Recycling Center
352 East 14th Street
Fond du Lac, WI 54935
414-922-3634

Schedule: Wednesday, June 27
8:30 a.m. - 12:00 noon

Mr. Fredrick Kasten
Dairy Farmer
Route #1
Omro, WI 54963
Phone 414-685-2650
Schedule: Monday, June 18
10:00 - 12:00 a.m.

Mr. Arthur Kurtz, Assistant Secretary
Wisconsin Department of Agriculture
801 West Badger Road
Madison, WI 53702
608-266-1721
Schedule: Thursday, June 14
1:00 - 2:45 p.m.

Mr. Robert L. Konick, Director
Fond du Lac County Planning Department
County Court House
Fond du Lac, WI 54935
414-921-5600
Schedule: Monday, June 11
2:00 - 2:45 p.m.

Mr. Michael J. Mike, Coordinator, Real Estate
Waukesha County Technical Institute
800 Main Street
Pewaukee, WI 53072
414-691-3200
Schedule: Tuesday, June 12
1:00 - 2:00 p.m.

Mr. James Kurtz
Attorney at Law
Department of Natural Resources
Bureau of Legal Services
Chief, Solicitor Section
Box 450
Madison, WI 53701
608-266-7588

Schedule: Friday, June 22
8:30 - 9:45 a.m.

Dr. Arthur E. Peterson, Professor of Soil Science
Extension Soil and Water Scientist
College of Agriculture and Life Sciences
Department of Soil Science
303 Soils Building
Madison, WI 53706
608-262-2631

Schedule: Tuesday, June 19
10:45 a.m. - 12:00 noon

Dr. Norris Jones, Assistant Professor of Geology
University of Wisconsin - Oshkosh
Oshkosh, WI 54901
414-424-1234

Schedule: Thursday, June 25
1:00 - 2:00 p.m.

Mr. Robert Personius, Manager
Horicon National Wildlife Refuge
Horicon, WI. 53032
414-387-2658

Schedule: Monday, June 25
8:15 - 9:45 a.m.

Mr. Burton Peters, Division Manager
Wisconsin Power and Light Company
15 North Main Street
Fond du Lac, WI 54935
414-921-3308

Schedule: Thursday, June 28
10:15 - 12:00 p.m.

Mr. Alvin H. Randall, Exec. Secretary
Wisconsin Canners and Freezers Association
110 E. Main Street
Madison, WI. 53703
608-255-9946

Schedule: Monday, June 18
10:00 - 12:00 p.m.

Mr. James Sergeant, Chief
Section of Plumbing and Related Services
Bureau of Environmental Health, Division of Health
1 West Wilson Street, P.O. Box 309
Madison, WI 53702
608-266-3815

Schedule: Thursday, June 14
1:00 - 2:45 p.m.

Professor Byron Shaw, Soil Consultant
University of Wisconsin - Stevens Point
Stevens Point, WI 54481
Phone 715-346-0123
Schedule: Friday, June 15
9:00 a.m. - 5:00 p.m.

Mr. Richard Sherman
Service Zone Manager
Pontiac Motor Division, GMC
2421 North Mayfair Road
Mayfair Plaza
Milwaukee, WI 53226
414-778-0050
Schedule: Thursday, June 28
8:30 - 10:00 a.m.

Mr. Harry Soukup, President
Giddings and Lewis Sales Company
142 Doty Street
Fond du Lac, WI 54935
414-921-9400
Schedule: Monday, June 18
10:00 - 12:00 p.m.

Mr. A. W. Tandy, Chief, DNR
Certification and Home Licensing Section
Bureau of Water Supply and Pollution Control
Division of Environmental Protection
4610 University Avenue
Madison, WI 53702
608-266-0151
Schedule: Monday, June 11
1:00 - 2:00 p.m.

Mr. David W. Walker, Executive Secretary
Wisconsin Environmental Education Council
Lowell Hall, 610 Langdon Street
Madison, WI 53706
608-263-3327
Schedule: Tuesday, June 12
9:30 - 10:15 a.m.

Dr. Edward W. Weidner, Chancellor
University of Wisconsin - Green Bay
Green Bay, WI 54302
414-465-2207
Schedule: Monday, June 11
9:30 - 10:30 a.m.

Dr. Mark Menchik
Assistant Professor of Geography and Environmental Studies
Science Hall - University of Wisconsin
Madison, WI 53706
608-262-1857
Schedule: Thursday, June 21
9:45-11:00 a.m.

Mr. William A. Buehring
University of Wisconsin
Instructor for Environmental Studies
1063 WARF
Madison, WI 53706
608-263-4698
Schedule: Friday, June 29
12:00 - 2:00 p.m.

APPENDIX D

Environmental Education Institute - June 11-29, 1973

University of Wisconsin Center-Fond du Lac

Institute Enrollment

Ahrens, Lowell F.
Rural Route 2
Mineral Point, WI 53565
Agriculture-Farm Training Program
Southwest Wisconsin Vocational-Technical School

Ames, Kent G.
756 West Wisconsin Avenue
Pewaukee, WI 53702
Electronics
Waukesha County Technical Institute

Arnold, Fred M.
1126 Timothy
Madison, WI 53716
Social Sciences
Madison Area Technical College

Barkoff, Allen
2227 Commonwealth
Madison, WI 53705
Biology
Madison Area Technical College

Barribeau, William K.
2319 South Carpenter Street
Appleton, WI 54911
Accounting
Fox Valley Technical Institute

Barry, Robert
121 Lake Street
Holmen, WI 54636
General Education
Western Wisconsin Technical Institute

Bigley, D. Vicki
309 North 23rd Street
LaCrosse, WI 54601
Health Occupations
Western Wisconsin Technical Institute

Buretta, Daniel
811 Meadowbrook Lane
Fond du Lac, WI 54935
Mathematics
Moraine Park Technical Institute

Czekala, Marjorie
Route 5, Box 142
Manitowoc, WI 54220
New Holstein Elementary School

Decker, Juanita M.
4012 North Golden Lake Road
Oconomowoc, WI 53066
Food Service
Waukesha County Technical Institute

Drazkowski, Keith D.
Route 1, Box 313A
Malone, WI 53049
Manufacturing Processes
Moraine Park Technical Institute

Edge, Joseph L.
3324 Royal Road
Janesville, WI 53545
Division Chairman - Agriculture
Blackhawk Technical Institute

Fredericksen, June
1117 Gilbert Street
Wausau, WI 54401
Home Economics
North Central Technical Institute

Gilson, Thomas
617 Pleasant Hill Avenue
Lomira, WI 53048
Lomira Community Schools

Environmental Education Institute Enrollment, 1973 - Continued

Gold, Beverly
Box 83
Woodman, WI 53827
Home Furnishings
Southwest Wisconsin Vocational-
Technical School

Gotz, Francis R.
Route 3, Box 296E
Wisconsin Rapids, WI 54494
Mechanical Design
Mid-State Technical Institute

Grundahl, Clarence
610 Greenfield Avenue
Beaver Dam, WI 53916
Farm Training Program
Moraine Park Technical Institute

Hackbarth, David
111 North Peters Avenue
Fond du Lac, WI 54935
Goodrich High School

Hemauer, Robert E.
218 Highland
Plymouth, WI 53073
Farm Training Program
Lakeshore Technical Institute

Hennekens, William D.
816 Seventh Avenue East
Superior, WI 54880
Marketing
Wisconsin Indianhead Technical
Institute

Henschel, Floyd R.
504 Maple Avenue, West
Beaver Dam, WI 53916
Beaver Dam Junior High School

Hunt, David A.
905 Milton Avenue
Janesville, WI 53545
Marketing
Blackhawk Technical Institute

Jensen, Chester A.
116 Wenban Avenue
Neenah, WI 54956
Mechanical Design
Fox Valley Technical Institute

Jones, Howard E.
102 South Fourth
Muscoda, WI 53573
Farm Training Program
Southwest Wisconsin Vocational-
Technical School

Kelm, Eda Ann
4010 Riverview Drive
Wausau, WI 54401
Nursing
North Central Technical Institute

Kilgour, William E.
332 Marston Avenue
Madison, WI 53703
American Institutions
Madison Area Technical College

Lay, H. John
501 McDill Avenue
Stevens Point, WI 54481
Business Education
Mid-State Technical Institute

Mischoch, LaRon
Rural Route #1, Box 272A
Sheboygan Falls, WI 53085
Sheboygan Falls High School

Morzenti, Donald
2719 Wisconsin Street
Sturtevant, WI 53177
Natural Science
Milwaukee Area Technical College

Mueller, Carl A.
Route #1, Box 1391
Onalaska, WI 54650
Agri-Business
Western Wisconsin Technical Institute

Munson, O. Allen
13 East Third Street
Washburn, WI 54891
Quantity Food Preparation
Wisconsin Indianhead Techical
Institute

Neumeyer, Nancy
113 South Sixth Avenue
St. Nazianz, WI 54232
New Holstein Elementary School

Nitschke, Herbert
Rural Route 4
Beaver Dam, WI 53916
Metal Fabrication
Moraine Park Technical Instiute

Perkofski, Barbara
1105½ North Third Avenue
Wausau, WI 54401
Nursing
North Central Technical Instiute

Rameker, Paul C.
818 East Brown Street
Waupun, WI 53963
Agriculture Mechanics
Moraine Park Technical Institute

Scott, David W.
2910 Nottingham Way
Madison, WI 53713
Architecture, Civil and Land Surveying Technology
Madison Area Technical College

Serpe, Ann M.
201 Pearson Drive
Lake Geneva, WI 53147
Delavan-Darien High School

Strehmel, John D.
9026 24th Avenue
Kenosha, WI 53140
Instructor - Horticulture
Gateway Technical Institute

Van Handel, Julius
2318 Wallonnie Drive
Marshfield, WI 54449
Wood Technics, High School Coop.
Mid-State Technical Institute

Vertein, Kenneth
1209 Eighth Street
Baraboo, WI 53913
Principal,
Fairfield Center School

Wacker, Arlo
1009 MacArthur Drive
Beaver Dam, WI 53916
Power Mechanics
Moraine Park Technical Institute

Winek, Dorothea
11145 West Clarke
Milwaukee, WI 53226
Clothing; Home Management and Furnishings
Milwaukee Area Technical College

Wolfe, William K.
Route 2, Box 83
Potosi, WI 53820
Communications
Southwest Wisconsin Vocational-Technical School

APPENDIX E

ENVIRONMENTAL EDUCATION INSTITUTE - June 11-29, 1973

Daily Program

Monday, June 11

7:30 - 8:00	Coffee
8:00 - 8:15	Announcements
8:15 - 8:40	Test on Environment
8:40 - 9:30	Welcome - Dr. Willard Henken, Dean University of Wisconsin Center - FDL Mr. Robert P. Sorensen, Director Moraine Park VTAE District Overview - Mr. Doyle E. Beyl Bureau of Research Professional and Student Development Wisconsin State Board of VTAE Mr. Philip Stoll, Assistant to Director Moraine Park VTAE District Mr. Allen Linster, Consultant Wisconsin Board of VTAE
9:30	Keynote Presentation - Dr. Edward W. Weidner, Chancellor University of Wisconsin - Green Bay
10:30	Break
10:45	Speaker - David C. Engleson Department of Public Instruction Conservation Education - Madison
12:00	Lunch
1:00	Speaker - Mr. A. W. Tandy, Chief Certification and Home Licensing Div. Department of Natural Resources
2:00	Speaker - Mr. Robert L. Konik, Director Fond du Lac County Planning Department
2:45	Break
3:00	Discussion of Above Presentations - Dr. Tews
3:15 - 5:00	Concept #1 - "Man and His Environment" - Dr. Tews, & Staff

Tuesday, June 12

8:30	Population Explosion - Dr. Tews
9:30	Presentation - Mr. David W. Walker Wisconsin Environmental Education Council, Madison
10:15	Break
10:30	Film: "Tragedy of the Commons"
11:30	Discussion of film - Dr. Tews
12:00	Lunch
1:00	Presentation - Zoning, Real Estate and the Environment Mr. Michael J. Mike, Coordinator
2:00	Discussion of Above Presentation - Dr. Tews
2:15	Concepts Orientation - Dr. Taylor, & Staff
3:15	Break
3:30 - 5:00	Work Session - Dr. Taylor, & Staff

Wednesday, June 13

8:30	Field Trip to Lake Winnebago Area - Dr. Sloey & Dr. Spangler
10:00	Presentation - Dr. Sloey & Dr. Spangler
12:00	Lunch
1:00	Concept #3 - "Water" - Dr. Tews
2:00	Break
2:15 - 5:00	Concept #3 - Integration Into Guidelines - Dr. Taylor, & Staff

Thursday, June 14

8:30-12:00	Field Trip to Stream or Marsh - Dr. Sloey & Dr. Spangler
10:30	Presentation - Dr. Sloey & Dr. Spangler
12:00	Lunch
1:00	Panel Presentation - Mr. Thomas Calobrese, Chief Private Water Supply Department of Natural Resources Mr. Arthur Kurtz, Assistant Sec'y Wisconsin Department of Agriculture

Mr. James Sergeant, Chief
Plumbing and Related Services
Bureau of Environmental Health
Wisconsin Division of Health

2:45	Break
3:00	Concept #3B - Dr. Tews
3:30	Concept #3B - Integration Into Guidelines Dr. Taylor, & Staff

Friday, June 15

9:00	Field Trip - Mr. Byron Shaw, Soil Consultant University of Wisconsin - Stevens Point
11:00	Filmstrip - "How Good Is Your Soil?" - Mr. Shaw
12:00	Lunch
1:00	Discussion - Presentation and Film - Mr. Shaw
2:00	Concept #2 "Soil" - Dr. Tews
3:00	Break
3:15 - 5:00	Concept #2 - Integration Into Guidelines - Dr. Taylor, & Staff

Monday, June 18

8:30	Presentation - Agricultural Chemicals Mr. Ellsworth Fisher University of Wisconsin - Madison
10:00	Panel Presentation: Mr. Alvin H. Randall Wisconsin Canners & Freezers Assn. Madison Mr. Frederick Kasten Dairy Farmer Omro Mr. Harry Soukup Giddings and Lewis Fond du Lac
12:00	Lunch
1:00	Concept #4 - "Population" - Dr. Tews
2:15 - 5:00	Concept #4 - Integration Into Guidelines Dr. Pickering, & Staff

Tuesday, June 19

8:30	Presentation - Dr. Milton G. Mitchell University of Wisconsin - Oshkosh
9:30	Presentation - Wildlife and Other Natural Resources Mr. Robert Ellarson Professor of Wildlife Ecology University of Wisconsin - Madison
10:30	Break
10:45	Presentation - Disposal of Liquid Waste on Soil Dr. Arthur Peterson University of Wisconsin - Madison
12:00	Lunch
1:00	Discussion - Above Presentations - Dr. Tews
1:30	Concept #5 - "$ Sign" - Dr. Tews
2:00	Concept #5 - Integration Into Guidelines Dr. Pickering and Staff
2:30	Break
2:45 - 5:00	Guidelines Development - Dr. Pickering and Staff

Wednesday, June 20

8:30	Management of Resources - Mr. Russell Daley, DNR - Oshkosh
10:00	Break
10:15	Concept #6 - "Who Me? - Man Shapes His Environment" - Dr. Tews
12:00	Lunch
1:00	Concept #6 - Integration Into Guidelines - Dr. Pickering and Staff
3:00	Break
3:15 - 5:00	Workshop - "Guidelines" - Dr. Pickering and Staff

Thursday, June 21

8:30	Presentation - Natural Resources, Human Resources and Economics - Dr. Gordon Cunningham University of Wisconsin - Madison
9:45	Presentation - Human Response to the Physical Environment Dr. Mark Menchik University of Wisconsin - Madison
12:00	Lunch

1:00	Concept #7 - "Man Thinks" - Dr. Tews
3:00	Break
3:15 - 5:00	Work Session - "Guidelines" - Dr. Pickering, & Staff

Friday, June 22

8:30	"The Environment in the Legislature" - Mr. James Kurtz Attorney, DNR - Madison
10:00	Break
10:15	Concept #8 - "The Environment Is Everybody's Business" Dr. Tews
12:00	Lunch
1:00 - 3:30	Concept #8 - Integration Into Guidelines Dr. Pickering, & Staff

Monday, June 25

7:45	Field Trip to Horicon Marsh Leave UW Center by bus - parking lot #1
8:15	Arrive at Horicon National Wildlife Refuge Office County Trunk Z
8:15 - 9:45	Assembly and bus tour - Mr. Robert Personius, Manager National Wildlife Refuge
10:15 - 11:00	DNR Horicon March Headquarters - Mr. James Bell, District Manager
11:15 - 12:15	Lunch - Supper Club - Highway #28
12:20 -	Return to UW Center
1:15	To be announced
2:15 - 3:00	Concept #9 - "Present Concepts" - Dr. Tews
3:00	Break
3:15 - 5:00	Concept #9 - Integration Into Guidelines Dr. Drecktrah Dr. Schneck, & Staff

Tuesday, June 26

8:30	Presentation - Wisconsin Forests and Forestry Mr. Richard Hall Fox Valley Technical Institute
10:00	Break

10:15 Presentation - Paper Mills in Wisconsin
Mr. Richard Billings
Kimberly-Clark Industries

12:00 Lunch

1:00 Concept #10 - "Forests" - Dr. Tews

1:30 Concept #10 - Integration Into Guidelines
Dr. Drecktrah
Dr. Schneck, & Staff

3:15 Break

3:30 - 5:00 Workshop - "Guidelines"

Wednesday, June 27

8:30 Sewage Disposal Plant and Re-cycling Station
Dr. Tinker

Mrs. Lucille Johnson, President
Recycling Center - Fond du Lac

12:00 Lunch

1:00 Mineral Wealth in Wisconsin - Dr. Charles Fetter
University of Wisconsin
Oshkosh

2:00 Discussion

2:15 Concept #11 - "Minerals" - Dr. Tews

2:45 Break

3:00 - 5:00 Concept #11 - Integration Into Guidelines
Dr. Drecktrah
Dr. Schneck, & Staff

Thursday, June 28

8:30 The Automobile and Its Adjustment
Mr. Richard Sherman
Service Zone Manager
Pontiac Motor Division

10:00 Break

10:15 The Electronical Power Industry and the Environment
Mr. Burton Peters
Wisconsin Power and Light Company

12:00 Lunch

1:00	Wisconsin Minerals - Dr. Norris Jones University of Wisconsin - Oshkosh
2:00	Concept #12 & #13 - "Modern Man Creates Waste" - Dr. Tews
2:30	Concept #12 & #13 - Integration Into Guidelines Dr. Drecktrah Dr. Schneck, & Staff
3:15	Break
3:30 - 5:00	Workshop - "Guidelines"

Friday, June 29

8:30	Post test attitudes
8:50	Critique - Guidelines
9:30	Evaluation of Institute by Participants
10:00	Break
10:15	Evaluation of Institute continued
10:45	Discussion - Integrating Guidelines in District Curricula
11:15	Planning Guidelines Evaluation In-service Program to be held on December 15, 1973, 9:00 - 3:00 p.m.
11:45	Results of Attitude Tests
12:00	Dinner
1:00	"What is the Energy Crisis" - Mr. William Buehring Instructor for Environmental Studies University of Wisconsin - Madison
2:00	Closing Comments - Staff
2:15	Completion of Environmental Education Institute

Thank you for your contributions to the Institute

Have a successful semester Environmentally

We will be together here on December 15, 1973

APPENDIX F

Category #1

MAN & HIS ENVIRONMENT

Concept

1. Living things are interdependent with one another and their environment.

5. Modern man affects the structure of his environment.

7. Man has ability to manipulate and change the environment.

12. Environmental management has effects on individual and social institutions.

13. Man's need for food, fiber, and minerals increases as populations expand and levels of consumption rise.

20. A variety of institutional structures are involved in planning and managing the environment.

29. Economic efficiency does not always result in conservation of a natural resource.

32. Conservation policy is determined by the interaction of science and technology; social and political factors; and aesthetic, ethical, and economic considerations.

45. Pollutants and contaminants are produced by natural and man-made processes.

56. Man is influenced by many of the same hereditary and environmental factors that affect other organisms and their populations.

57. The rate of change in an environment may exceed the rate of organism adaptation.

58. Organisms and environments are in constant change.

59. All living things, including man, are continually evolving.

Category #2

CATEGORIZATION OF ENVIRONMENTAL EDUCATION CONCEPTS

SOIL

Concept

14. Conflicts emerge between private land use rights and the maintenance of environmental quality for the general public.

19. Options available to future generations must not be foreclosed.

37. Increasing population and per capita use of resources have brought changed land to man or resource to population ratios.

49. Most resources are vulnerable to depletion in quantity, quality or both.

51. Natural resources, water and minerals in particular, are unequally distributed with respect to land areas and political boundaries.

70. The non-renewable resource base is considered finite.

71. Soil is classified as a renewable resource, but, because it may take a few years to thousands of years to be "renewed", it is more practically termed a depletable resource.

73. Maintaining, improving, and in some cases restoring soil productivity is important to the welfare of people.

74. Geological process is like erosion and deposition modify the landscape.

75. Soil productivity can be maintained by utilizing known agronomic, mechanical and chemical processes.

Category #3

WATER

Concept

34. A sound natural policy is dependent upon a flexible political system, pragmatically appraising and reappraising policies and programs in terms of their effect upon the public interest and in light of scientific knowledge about the natural resources.

35. Consumption practices are constantly being expanded by our ability to produce and create wants and market, which affects the rate of resource use.

44. Safe waste disposal, including the reduction of harmful and cumulative effects of various solids, liquids, gases, radioactive wastes, and heat, is important if the well being of man and the environment is to be preserved.

64. Water supplies, both in quantity and quality are important to all levels of living.

65. The earth and life on it are greatly affected by the atmosphere.

66. Water is a reusable and transient resource, but the available quantity may be reduced or quality impaired.

67. As populations increase competition for the use of water increases resulting in a need for establishing water use priorities.

68. The amount of precipitation that becomes available for use by man varies with topography, land use, and applied management practices.

83. Individual citizens should be stimulated to become well informed about resource issues, problems, management procedures, and ecological principles.

Category #4

POPULATION (MODERN MAN LOOKS AT HIS ENVIRONMENT)

Concept

6. Esthetic resources and recreational facilities of economic and non economic value are becoming increasingly important in leisure-time activities.

10. There are certain risks taken, and limitations experienced, when manipulating the natural environment.

18. Increased population mobility is changing the nature of the demands upon some resources.

24. Architecture can be one of the positively persuasive influences in developing a congenial environment.

25. Zoning is a practice in which land uses are prescribed based upon value-judgments regarding the needs of society.

36. Individuals tend to select short term economic gains, often at the expense of greater long term environmental benefits.

46. Increasing human populations, rising levels of living and the resultant demands for greater industrial and agricultural productivity promotes increasing environmental contamination.

82. Man has responsibility to develop an appreciation of and respect for the rights of others.

96. Individual citizens should be stimulated to become active in the political process.

Category #5

$ SIGN

Concept

2. Man has been a factor affecting plant and animal succession and environmental processes.

3. The management of natural resources to meet the needs of successive generations demands long-range planning.

17. The management of natural resources is culture bound.

26. Ready transportation, growing interest, money surpluses, and increased leisure time combine to create heavy pressures on existing recreation facilities and demands for new ones.

27. Outdoor recreation is an increasingly important part of our culture and our economy.

28. The economy of a region depends on the utilization of its natural, human, and cultural resources and technologies over time.

33. Conventional benefit-cost analyses do not always result in sound conservation decisions.

53. Natural resources affect and are affected by the material welfare of a culture and directly or indirectly by philosophy, religion, government and the arts.

95. Historically, cultures with high technological development have used more natural resources than those with lower levels of technological development.

Category #6

WHO ME? MAN SHAPES HIS ENVIRONMENT

Concept

4. Environmental management involves the application of knowledge from many different disciplines.

11. Resource depletion can be slowed by the development and adoption of alternatives.

16. Management is the result of technical and scientific knowledge being applied in a rational direction to achieve a particular objective.

30. The distribution or location of resources in relation to population, technological and economic factors are critical to problems of resource conservation and use.

31. The political and economic strength of a country is in part, dependent upon its access to domestic and foreign resources and international relationships.

39. Long range planning for the use and allocation of natural and human resources is continually evolving.

86. Knowledge of the social structures, institutions, and culture of a society must be brought to bear on environmental considerations.

91. In a democracy, a basic theory is that increasing restrictions on resource allocation and use are imposed by the consent or insistence of the people.

100. As populations increase and/or as resource supplies decrease, the freedom of the individual to use the resources as he wishes decreases irrespective of the form of government.

101. Family planning and the limiting of family size are important if over-population is to be avoided and a reasonable standard of living assured for successive generations.

Category #7

MAN THINKS

Concept

102. The individual must develop his ability to perceive if he is to increase his awareness and develop environmental perspective.

103. Individuals perceive different self-roles depending upon their position in the social and environmental context.

104. Man has the capability of improving society through sociology, psychology, and science.

105. Man is a high animal form because of his ability to reason.

106. Man is continually developing an ethical base for making value judgments.

107. Man performs some tasks at a high physiological cost.

108. Opportunities to experience and enjoy nature are psychologically rewarding to many and are important to mental health.

109. The need of man to turn inward for self renewal can be stimulated by his external aesthetic experiences.

110. Resources have a psychological impact on people.

111. Emotional reactions can be elicited by exposure to physical objects and geometric forms.

Category #8

THE ENVIRONMENT IS EVERYONE'S BUSINESS

Concept

8. A knowledge of the social physical and biological sciences and humanities is important for environmental understanding.

9. Social and technological changes alter the interrelationships, importance and uses for natural resources.

15. A cultural and time lag exists between the development of knowledge in science and technology and application of the knowledge to resource and environmental problems.

32. Conservation policy is determined by the interaction of science and technology; social and political factors, and aesthetic, ethical, and economic consideration.

38. Goods and services are produced by the interaction of labor, capital, natural resources, and technology.

40. Choices between needs (essentials) and wants or desires (nonessentials) are often in conflict.

42. Supply and demand, in relation to values held by society, determines what is a resource and its economic values.

43. The more efficient use of some resources is the result of technical and marketing improvements.

84. Conservation responsibilities should be shared by individuals, businesses and industries, special interest groups, and all levels of government and education.

85. Man has moral responsibility for his environmental decisions.

88. Man is developing the technical and sociological knowledge needed to control population growth, modify environments, and alter resource use patterns.

92. The culture of a group is its learned behavior in the form of customs, habits, attitudes, institutions, and lifeways that are transmitted to its progeny.

99. Conservation policies are often the result of group action.

Category #9

PRESENT CONCEPTS

Concept

21. Hunting regulations are useful in maintaining and restoring populations as well as in distributing the game harvest.

23. Multiple use is a practice in which a given land area functions in two or more compatible ways.

22. Management of habitat is considered to be an effective technique of wildlife management when the desire is to increase numbers of particular populations.

47. Natural resources are interdependent and the use or misuse of one will affect others.

48. In any environment, one component like: space, water, air, or food may become a limiting factor.

50. The interaction of environmental and biological factors determine the size and range of species and populations.

60. The form of life present depends upon the coincidence of the life needs and their availability in an environment.

62. Animal populations are renewable resources.

79. Wildlife refuges, undisturbed natural areas, and preserves may be of value in protecting endangered species and perpetuating the general pool.

80. Wildlife populations are important economically, aesthetically, and biologically.

81. Wildlife is considered to be a public resource.

Category #10

FORESTS

Concept

52. The renewable resource base can be extended by reproduction, growth, and management.

55. An organism is the product of its heredity and environment.

61. Biological systems are described as dynamic because the materials and energy involved are parts of continuous cycles; inorganic materials and energy become part of organic materials and are subsequently broken down into simpler substances and energy as a result of the operation of organic systems.

63. Succession is the gradual and continuous replacement of one kind of plant or animal complex by another and is characterized by gradual changes in species composition.

76. Green plants are the ultimate sources of food, clothing, shelter, and energy in most societies.

77. Plants are renewable resources.

78. Energy is supplied to an ecosystem by the activities of green plants.

Category #11

MINERALS

Concept

69. Mineral conservation involves the utilization of all known methods of using the minerals of the earth's crust that will cause them to serve more people for a longer time.

72. Minerals are nonrenewable resources.

Category #12

MODERN MAN CREATES WASTE

Concept

38. Goods and services are produced by the interaction of labor, capital, natural resources, and technology.

40. Choices between needs (essentials) and wants or desires (nonessentials) are often in conflict.

45. Pollutants and contaminants are produced by natural and man-made processes.

46. Increasing human populations, rising levels of living and the resultant demands for greater industrial and agricultural productivity promotes increasing environmental contamination.

87. The relationships between man and the natural environment are mediated by his culture.

90. Public opinion constitutes a control over the use of conservation practices.

95. Historically, cultures with high technological development have used more natural resources than those with lower levels of technological development.

98. Policies, including natural resource policies, came about as the result of interacting social processes: science and technology, government operations, private interests, and public attitudes.

Category #13

WHERE DO WE GO?

Concept

41. Raw materials and energy supplies are generally obtained from those resources and places where they are available at least cost, usually in short economic terms.

54. The natural environment is irreplaceable.

93. Man has psychobiological and biosocial needs.

94. Human resources include the physical and mental abilities with which man is endowed and the knowledge he has generated.

97. We have "legal" ownership of some resources like real estate and control over others during our lifetime, but ethically we are "stewards" rather than owners of the resource base.

APPENDIX G

1. DRIVE A SPORTS CAR................................ GOOD __ | __ | __ | __ | __ BAD
STRONG __ | __ | __ | __ | __ WEAK
EXCITING __ | __ | __ | __ | __ BORING

2. TEACH CHILDREN TO READ............................. GOOD __ | __ | __ | __ | __ BAD
STRONG __ | __ | __ | __ | __ WEAK
EXCITING __ | __ | __ | __ | __ BORING

3. RIDE IN A POWERFUL SPEEDBOAT....................... GOOD __ | __ | __ | __ | __ BAD
STRONG __ | __ | __ | __ | __ WEAK
EXCITING __ | __ | __ | __ | __ BORING

4. COMMUNITY ACTION................................... GOOD __ | __ | __ | __ | __ BAD
STRONG __ | __ | __ | __ | __ WEAK
EXCITING __ | __ | __ | __ | __ BORING

5. BAKE BREAD... GOOD __ | __ | __ | __ | __ BAD
STRONG __ | __ | __ | __ | __ WEAK
EXCITING __ | __ | __ | __ | __ BORING

6. HAVE INFLUENCE IN HIGH PLACES...................... GOOD __ | __ | __ | __ | __ BAD
STRONG __ | __ | __ | __ | __ WEAK
EXCITING __ | __ | __ | __ | __ BORING

7. WILDFLOWERS.. GOOD __ | __ | __ | __ | __ BAD
STRONG __ | __ | __ | __ | __ WEAK
EXCITING __ | __ | __ | __ | __ BORING

8. "AMERICA: LOVE IT OR LEAVE IT"..................... GOOD __ | __ | __ | __ | __ BAD
STRONG __ | __ | __ | __ | __ WEAK
EXCITING __ | __ | __ | __ | __ BORING

9. GO ON A SHOPPING SPREE.............................. GOOD ___ | ___ | ___ | ___ | ___ BAD

STRONG ___ | ___ | ___ | ___ | ___ WEAK

EXCITING ___ | ___ | ___ | ___ | ___ BORING

10. HELP PEOPLE SOLVE THEIR PROBLEMS.................. GOOD ___ | ___ | ___ | ___ | ___ BAD

STRONG ___ | ___ | ___ | ___ | ___ WEAK

EXCITING ___ | ___ | ___ | ___ | ___ BORING

11. BIG GAME HUNTER.................................. GOOD ___ | ___ | ___ | ___ | ___ BAD

STRONG ___ | ___ | ___ | ___ | ___ WEAK

EXCITING ___ | ___ | ___ | ___ | ___ BORING

12. BOYCOTT.. GOOD ___ | ___ | ___ | ___ | ___ BAD

STRONG ___ | ___ | ___ | ___ | ___ WEAK

EXCITING ___ | ___ | ___ | ___ | ___ BORING

13. TALK WITH A FRIEND............................... GOOD ___ | ___ | ___ | ___ | ___ BAD

STRONG ___ | ___ | ___ | ___ | ___ WEAK

EXCITING ___ | ___ | ___ | ___ | ___ BORING

14. HAVE POWER OVER OTHERS........................... GOOD ___ | ___ | ___ | ___ | ___ BAD

STRONG ___ | ___ | ___ | ___ | ___ WEAK

EXCITING ___ | ___ | ___ | ___ | ___ BORING

15. BUILD A BIRD SANCTUARY........................... GOOD ___ | ___ | ___ | ___ | ___ BAD

STRONG ___ | ___ | ___ | ___ | ___ WEAK

EXCITING ___ | ___ | ___ | ___ | ___ BORING

16. "LAW AND ORDER"................................... GOOD ___ | ___ | ___ | ___ | ___ BAD

STRONG ___ | ___ | ___ | ___ | ___ WEAK

EXCITING ___ | ___ | ___ | ___ | ___ BORING

17. WEAR NEW CLOTHES TO A PARTY...................... GOOD __ | __ | __ | __ | __ BAD

STRONG __ | __ | __ | __ | __ WEAK

EXCITING __ | __ | __ | __ | __ BORING

18. WRITE MUSIC, PAINT, CREATE THINGS............... GOOD __ | __ | __ | __ | __ BAD

STRONG __ | __ | __ | __ | __ WEAK

EXCITING __ | __ | __ | __ | __ BORING

19. FUR COAT... GOOD __ | __ | __ | __ | __ BAD

STRONG __ | __ | __ | __ | __ WEAK

EXCITING __ | __ | __ | __ | __ BORING

20. SIT-IN TO PROTEST................................ GOOD __ | __ | __ | __ | __ BAD

STRONG __ | __ | __ | __ | __ WEAK

EXCITING __ | __ | __ | __ | __ BORING

21. PLAY THE FLUTE................................... GOOD __ | __ | __ | __ | __ BAD

STRONG __ | __ | __ | __ | __ WEAK

EXCITING __ | __ | __ | __ | __ BORING

22. GET TO THE TOP................................... GOOD __ | __ | __ | __ | __ BAD

STRONG __ | __ | __ | __ | __ WEAK

EXCITING __ | __ | __ | __ | __ BORING

23. EXPLORE A FOREST................................. GOOD __ | __ | __ | __ | __ BAD

STRONG __ | __ | __ | __ | __ WEAK

EXCITING __ | __ | __ | __ | __ BORING

24. PROPERTY RIGHTS.................................. GOOD __ | __ | __ | __ | __ BAD

STRONG __ | __ | __ | __ | __ WEAK

EXCITING __ | __ | __ | __ | __ BORING

25. $100,000 A YEAR SALARY.......................... GOOD __ | __ | __ | __ | __ BAD
STRONG __ | __ | __ | __ | __ WEAK
EXCITING __ | __ | __ | __ | __ BORING

26. EARN AN AVERAGE SALARY.......................... GOOD __ | __ | __ | __ | __ BAD
STRONG __ | __ | __ | __ | __ WEAK
EXCITING __ | __ | __ | __ | __ BORING

27. SHOPPING CENTER................................ GOOD __ | __ | __ | __ | __ BAD
STRONG __ | __ | __ | __ | __ WEAK
EXCITING __ | __ | __ | __ | __ BORING

28. PETITION THE GOVERNMENT......................... GOOD __ | __ | __ | __ | __ BAD
STRONG __ | __ | __ | __ | __ WEAK
EXCITING __ | __ | __ | __ | __ BORING

29. CONDUCT A SCIENTIFIC EXPERIMENT.................. GOOD __ | __ | __ | __ | __ BAD
STRONG __ | __ | __ | __ | __ WEAK
EXCITING __ | __ | __ | __ | __ BORING

30. ADVERTISING AGENCY.............................. GOOD __ | __ | __ | __ | __ BAD
STRONG __ | __ | __ | __ | __ WEAK
EXCITING __ | __ | __ | __ | __ BORING

31. WATCH THE SUN GO DOWN........................... GOOD __ | __ | __ | __ | __ BAD
STRONG __ | __ | __ | __ | __ WEAK
EXCITING __ | __ | __ | __ | __ BORING

32. "IT'S A FREE COUNTRY"........................... GOOD __ | __ | __ | __ | __ BAD
STRONG __ | __ | __ | __ | __ WEAK
EXCITING __ | __ | __ | __ | __ BORING

33. BE A BIG SPENDER................................	GOOD	__	__	__	__	__	BAD
	STRONG	__	__	__	__	__	WEAK
	EXCITING	__	__	__	__	__	BORING
34. BE A SOCIAL WORKER................................	GOOD	__	__	__	__	__	BAD
	STRONG	__	__	__	__	__	WEAK
	EXCITING	__	__	__	__	__	BORING
35. OIL WELLS..	GOOD	__	__	__	__	__	BAD
	STRONG	__	__	__	__	__	WEAK
	EXCITING	__	__	__	__	__	BORING
36. PICKET LINE......................................	GOOD	__	__	__	__	__	BAD
	STRONG	__	__	__	__	__	WEAK
	EXCITING	__	__	__	__	__	BORING
37. RIDE A BICYCLE...................................	GOOD	__	__	__	__	__	BAD
	STRONG	__	__	__	__	__	WEAK
	EXCITING	__	__	__	__	__	BORING
38. BE A CHAMPION....................................	GOOD	__	__	__	__	__	BAD
	STRONG	__	__	__	__	__	WEAK
	EXCITING	__	__	__	__	__	BORING
39. CONSERVATIONIST..................................	GOOD	__	__	__	__	__	BAD
	STRONG	__	__	__	__	__	WEAK
	EXCITING	__	__	__	__	__	BORING
40. TWO-PARTY SYSTEM.................................	GOOD	__	__	__	__	__	BAD
	STRONG	__	__	__	__	__	WEAK
	EXCITING	__	__	__	__	__	BORING

APPENDIX H

424-2487

UW

SCHOOL OF EDUCATION
DEPARTMENT OF SECONDARY EDUCATION
UNIVERSITY OF WISCONSIN—OSHKOSH, WISCONSIN 54901

August 24, 1973

Mr. Vernon O. Horne
Environmental Education Institute
Project Director
Moraine Park Technical Institute
235 North National Avenue
Fond du Lac, Wisconsin 54935

Dear Mr. Horne:

You may use the following statement as you see fit in preparing your Curriculum Guides publication:

The consultant staff feels that the participants in the Environmental Education Institute have produced many excellent Guides for integrating environmental concepts into VTAE curricula. It is urged that the consideration and use of these Guides be commensurate with their high quality. We would further urge district and school administrators to actively encourage the classroom testing of these Guides. This will contribute to the success of the scheduled follow-up evaluation of the Institute's accomplishments in curriculum development.

Professionally,

Paul A. Taylor

Paul A. Taylor
Robert S. Pickering
George R. Schneck
Gene H. Drecktrah

PAT:kn

The University of Wisconsin-Oshkosh is an equal opportunity employer

APPENDIX I

ENVIRONMENTAL EDUCATION INSTITUTE - June 11 - 29, 1973

Evaluative Critique

I. Comment on the following:

a. Concepts development

b. Library (fields represented, variety of media available, reference papers, etc.)

c. Other

II. What are the most effective and useful features of this Institute?

III. Comment on major weaknesses or problems you have observed during the Institute.

IV. Suggest changes or additions you would recommend to improve an effort of this kind when offered another year (e.g. securing women to appear in appropriate programs, how to interest more women students in attending, etc.)

	Rating of Long Term Relevancy				
	High		Med.		Low
INDIVIDUAL SPEAKERS	5	4	3	2	1
Dr. Edward Weidner, Chancellor Keynote Speaker					
Doyle Beyl - State Vocational Office					
David Engelson, Dept. of Public Instr. Environment in Public Education					
A. W. Tandy, Dept. of Natural Resources Public Service Management					
Robert W. Konick, County Planning Dept.					
David W. Walker, Executive Secretary Wis. Environmental Council					
Michael J. Mike, Waukesha County T.I.: Real Estate					
Dr. Ellsworth Fisher, U. of Wis.-Madison					
Dr. Milton G. Mitchell, U.of Wis-Oshkosh Environmental Economics					
Prof. Robert Ellarson, U. of Wis-Madison Natural and Wildlife Resources					
Dr. Arthur Peterson, U. of Wis-Madison Farm Wastes on Soils					
Dr. Gordon Cunningham, U. of Wis-Madison Natural, Human Resources in Economics					
Dr. Mark Menchik, U. of Wis-Madison Environment and Human Response					
Mr. James Kurtz, Dept. of Agr. & Marketing. Environment in the Legislature					
Mr. Richard Hall, Fox Valley Tech. Inst. Wisconsin Forests and Forestry					

	Rating of Long Term Relevancy				
INDIVIDUAL SPEAKERS (Continued)	High		Med.		Low
	5	4	3	2	1
Dr. Richard Billings Paper Mills and River Quality					
Dr. Norris Jones, U. of Wis.-Oshkosh Wisconsin minerals					
Mr. Richard Sherman Automobile and Environment					
Mr. Burton Peters Electrical Industry & Environment					
FIELD TRIPS					
1. Fox River - Lake Butte de Morts Dr. Sloey, Dr. Spangler -Day #1					
2. Fox River - Lake Butte de Morts Dr. Sloey, Dr. Spangler -Day #2					
3. Mammoth Springs Sewage Disposition Farm Water Impoundment					
4. Hobb's Nature Area - Mr. Litscher					
5. Horicon Marsh - DNR & Federal Refuge James Bell - DNR					
Robert Personius - Federal Refuge					
6. Sewage Plant and Recycling Center Dr. Tinker & Mrs. Lucile Johnson					
PANELS					
1. Thomas Calobrese Arthur Kurtz					

	Rating of Long Term Relevancy				
	High		Med.		Low
PANELS (Continued)	5	4	3	2	1
2. Alvin H. Randall Frederick Kasten Harry Soukup					

APPENDIX J

Student Comments

Environmental Education Institute - June 11-30, 1973

I. Comment on concepts development

"Would like to have 'Categories' discussed as scheduled rather than switching from concept to concept according to rated number 1, 2, 3, 4 etc.
Dr. Tews did excellent job."

"Difficult to accustom myself to thinking that these are all of the concepts that apply and are critical to the subject."

"Good" (9)

"Very difficult to fit in some areas. Possibly another category could be instituted.
The December meeting might be moved to an earlier date and our concepts then could be turned in with a minimum number required from each student."

"Very good, but not all can be applied right away."

"They took awhile to do."

"Gained tremendous amount of knowledge - very good!!"

"I enjoyed Dr. Tews lecture on the concepts - very helpful."

"Very interesting and helpful. However, I had hoped each major concept would have been covered by Dr. Tews and then open it for general discussion. Occasionally we had too much discussion with little background to discuss it intelligently. Those lectures given by Dr. Tews were very informative and I guess I expected more for each concept or category."

"Writing a rationale and good instructional objective is beneficial, but the activities and method of execution isn't necessary."

"Kinda 'fuzzy' sometimes, but a good discipline."

"My field was limited and at first I had difficulty finding a concept to fit - but, hopefully I was successful. I feel I was. I especially liked this facet of the institute."

"Adequate for time allotted."

"There was a very good atmosphere under which the students were able to develop an awareness of the development of concepts."

"Perhaps need more specific review (training) at first meetings of proper write-up procedures."

"It was good for us to work in this direction but I believe the working time should have been varied during the day."

"Seemed to take a back seat, and rightly so. I can't really see their usefulness. Ideas, information, and topics could be adequately covered without them. They may have helped with the objectives."

"I'd have preferred this segment to have been done at alternate times of the day sometimes rather than always at the end of the day! Also - How much can we implement their use?"

"Sometimes a little unstructured."

"Dr. Tews handled Concept development beautifully. Many times I felt there was not enough time allowed for discussion of these concepts, or they had to be sacrificed when other things ran too long. This part of the discussion was vital to relate speakers to objective writing."

"Since many disciplines are represented, these concepts can be used in the development of numerous curriculum guidelines."

"Probably would be good if they can be incorporated into programs. A good method in learning to communicate by writing."

"Could have been more concepts to do with the work we are doing."

"Reasonable."

"Excellent."

"Very good - the instructors were most helpful and readily available."

"Very good." (5)

"Concept list too long; need development and trimming and organization by a team of students and a teacher. Models of careful objectives and evaluation should have been followed, but it was too great a leap for too many students; should have been more flexible with several patterns to follow."

"The typist should put the new concepts on the bottom of the pile instead of putting the new ones on the top. One week is too long for material to be worked on."

"The work sessions were productive and I feel the instructors were readily available to assist us."

Student Comments

Environmental Education Institute - June 11-30, 1973

I. Comment on library

"Generally good, might have been helpful to have suggestions from prospective students."

"Adequate."

"Did not use extensively enough to comment."

"The agricultural field regarding films or audio-visuals could be included in the forms of indexes, etc. as to availability and locations."

"Catalogs for filmstrips, films, etc. should be available for writing guidelines."

"Very well represented - from the radical viewpoint to conservative."

"Good." (11)

"Very good, but not enough publication information on bulletins or films."

"Good selection to help in the evaluation."

"Satisfactory."

"Never had to use library."

"Excellent. Very helpful."

"Good selection. How about adding Buckminster Fuller's Spaceship Earth?"

"Excellent - except for: The first two times I visited, they could not find catalogs I needed, (wrong personnel there those days). Also couldn't find book "No!"

"Very good." (5)

"Very adequate." (2)

"Could have had better availability to resources for ordering of films and filmstrips."

"More films."

"An excellent library - had a wide variety of books on the environment."

"Not too helpful in my area, but some will make good reference."

"Library facility was very adequate. Provided varied and thorough information."

"The check-out policy was very liberal and nonrestrictive. I like the number of selections available and also appreciate the bibliography list made available by Mr. Horne."

"Nice try, but insufficient."

"Very non-technical and useless."

Student Comments

Environmental Education Institute - June 11-30, 1973

I. Comment on other features of the Institute

"Noon lunch time - one hour is not enough time when lunch is off-campus.

"Instructional staff should all agree on criteria for evaluating curriculum guides."

"No emphasis on how these factors actually can affect our attitudes, way of life, interpersonal relationships."

"No emphasis on use of leisure time."

"Many other topics referred to were excellent."

"In general, I am pleased I attended."

"Lecture on population and control and birth control was very good. I am convinced that sex education should be taught in our educational systems. Many people, as myself find out about sex the wrong way."

"Very cooperative instructors."

"It would have been helpful to have had access to books and periodicals from the university campus library on a check-out basis."

"Library personnel very cooperative and friendly; nice atmosphere in which to study."

"Have an organized social event the first week, picnic, etc."

"I enjoyed the class discussion. I believe the Institute was very well organized (Mr. Horne) and directed (Dr. Tews).

"Afternoon sessions on behavior objective writing were very helpful. Staff cooperative and many positive suggestions."

"Excellent staff all the way!!"

Student Comments

Environmental Education Institute - June 11-30, 1973

II. What are the most effective and useful features of this Institute?

"Variety of speakers and topics, both pro and con, was good.
Required great deal of coordination and cooperation.
Appreciate not being told that we had to do 'X' number of curriculum guides.
Liked team teaching method."

"Open discussion following presentation of speakers -
Of course, this calls for good speakers who set the stages.
Value of teaching guidelines from concepts will not be known until the teaching is tried."

"1. Number and variety of speakers.
2. Field Trips.
3. Class discussion.
4. Variety of participants' backgrounds.
In that order."

"The varied speakers with each of their views.
The field trips to make one conscious of many of the environmental problems."

"Field trips."

"1. Field trips, speakers.
2. Bringing together the teachers from different fields, ages, school backgrounds for an exchange of viewpoints.
3. The discussions concerning the environment, etc. were excellent and very valuable.
4. Hearing from industry, farmers, scientists."

"The wide disciplines involved and the discussions that developed."

"The change which occurs in a man's thinking with respect to environment."

"The personnel brought in and presenting all sides and the discussions that followed."

"Getting other people's ideas. This brings a person up to date."

"The programs, speeches, field trips and discussions all provided a well-rounded education."

"I feel this whole course was very effective and useful.
Gained tremendous amount of knowledge - very educational."

"Field trip - auto disposal very good - doing something about junk autos."

"To better inform teachers concerning the environmental crisis and how we can incorporate corrective environmental practices in our school situations to inform the students."

"The speakers and field trips, developing our awareness of the environment."

"The bringing together of instructors from various schools and disciplines to share information and views on the environment."

"Field trip to Oshkosh - to marsh and to junk dealer."

"Listening, listening and digesting!! Expanding your own attitude boundaries! Seems some come and leave with narrow viewpoints especially about pollution being industry's problem only."

"In-depth look at environmental issues from various viewpoints, e. g., industry, government, educators, etc."

"The leisure way of progressing with the course - no pressure and the students acquire an awareness of the environmental problems. There was a variety of speakers from various areas involved with the environment."

"Field trips and speakers."

"1. Field trips.
2. Controversial viewpoints (to create discussion)."

"The new experiences through field trips and class discussions."

"I believe the field trips were an excellent education resource. The speakers were generally very good, presented their topics in an excellent manner."

"Exposure to the varied information and views. The discussion periods, led by Dr. Tews, were very good. There was much to be learned."

"It seems to me that Mr. Horne's management of this affair from planning stages through implementation and evaluation was EXCELLENT!! Very useful experiences."

"The various speakers."

"The speakers selected represented almost every area involved. Except for a few personal inadequacies they were excellent in that they provided varying viewpoints which could not have been heard or appreciated any other way."

"The large number of Oshkosh professors and outside resource speakers who have contributed their time and talents to this Institute and thus have instilled in me a greater concern for our environment."

"The good administration of the program. The main or lead instructor. The background material given by the speakers."

"It opened my eyes to what is going on in this country involving pollution."

"1. Mostly field trips were good because it made many aware of what is being done and what some want to do.
2. Dr. Tews' ability to lead people and conduct good student participation."

"Guest speakers and discussion that followed by Dr. Tews."

"Exposure to films, slides and good speakers.
Dr. Tews and Mr. Horne did an excellent job of coordinating program and the hospitality was just great."

"The speakers and panelist, Dr. Tews, and contact with other teachers."

"The interdisciplinary nature - speakers and classmates from many fields looking at an issue which touches many aspects of life."

"It gives a varied idea on what has been done and what should be done. Much better workshop than I had anticipated."

"Exposure to many different facets of ecology which would have been impossible or at least improbable otherwise."

"Hospitality, courtesy, and efficiency of Mr. Horne. Dr. Tews was an excellent coordinator to 'tie' everything together. Elicited much and good discussion. Much beneficial information presented."

"Organization and concern shown us by Mr. Horne. He is very helpful and his P. R. made one feel secure. Dr. Tews was excellent as coordinator and lead instructor. The other faculty members were appreciated, and all in all it was a graduate course filled with new materials as well as being fun!"

Student Comments

Environmental Education Institute - June 11-30, 1973

III. Comment on major weaknesses or problems you have observed during the Institute.

"Difficult to get to know participants - name tags would have been most helpful.
Too many hours scheduled for 3 credits.
Air conditioning in classrooms - too cold."

"Some speakers didn't present the material that was most useful. Some schedules were not as good as might have been. Bus didn't always arrive on time."

"Failure to promote controversy among scheduled speakers."

"Some of the speakers could have been more knowledgeable on their subjects. In general, fairly good."

"Some days too many speakers were scheduled.
Also, I would have liked to work on guidelines in the morning and to have speakers in the afternoon."

"Field trips to nature area should include a guided trip thru the habitat - not a lecture near it - e. g., Horicon Marsh trip."

"Not a major weakness but I thought more use could have been made of visual aids such as films on environmental problems."

"Better planning for meals on field trips. Not major - overall things were very good."

"More business involved - get people that do environmental control. Do not have P. R. men "soft soap" us. Ask industry for speakers who actually do. Example: Paper mill employee who can tell what the wastes involve (Maybe a team of chemists)."

"During the work periods - it was 'way too noisy."

"Some speakers were not too interesting or educational."

"Should have more time during last week to work on the guidelines - after we mastered how to construct them."

"There was nothing wrong with this program. I was very pleased to be a participant in this well-organized workshop."

"Not much time spent on how we can best implement that which we have learned. More small group activities would be more productive. Rather than individual speakers, why not set up panels and debates in areas where contradictory opinions and viewspoints occur."

"Should have had name tags to facilitate identification more easily. Outside of uncomfortable seats, it was beautifully run."

"I would like to see some break up into small group discussions on specific issues - then re-gathering of class into a whole with each group reporting."

"Typing of concepts very delayed!! This, I feel, cut into production of total number produced."

"Students have to wait in line to consult on Concept sheets with instructors. Method of grading should be explained clearly at the start of the course."

"Some of the speakers were a little weak but generally that cannot be determined prior to the presentation."

"The introductory speakers were terrible. I almost quit. After the first day there was steady improvement, however."

"I'm happy with the Institute in most ways. Many people commented that environmental problems are more social than science-oriented, yet this area of representatives, educators, etc. was poorly represented in frequency when compared to biologists., geologists, limnologists, etc."

"The lack of staff on duty at one time. It makes it difficult to have one or two staff members available to check your work when so many other people are trying to see them at the same time."

"Only possible shortcoming is that on some days too many things were scheduled. There was not enough time allowed to discuss."

"Good field trip but could have had more depth, i. e. more group leaders at Hobbs, a full day at Oshkosh."

"None. The program was very good."

"A few speakers should have been more technical rather than P. R. men from industry."

"None. I felt overall this has been the best 3 credits of my 18 graduate credits."

"Too much rigid regimentation. Not enough time to develop and explore new observations. Was misled by brochure describing Institute. My objectives for attending were denied by the planned objectives of the Institute's management."

"There should have been a more tangible central theme(s) structure for the focus of content and method.
Speakers should have been sent more specific assignments - as w/Mitchell - or a set of questions."

"I don't feel there have been any real major weaknesses. I feel I could have benefited more by Dr. Tews' lectures such as he gave the first week rather than the analysis of speakers during his assigned time in the third week."

"Fewer Ph. D's as speakers. A few had much to contribute but most of them had theory, but not as much to offer relative to practical application on vocational, technical level. Dr. Taylor came on 'too strong' and had a beautiful way of turning many off with his +2 -2 concept. The other instructors were most helpful and courteous in assisting us with our concepts."

"Many of the Ph. D's had no 'practical' experiences, all theory. People from industry were the poorest presenters. Field trips could be scheduled from Tuesday on as arriving here on Mondays makes for a long, tiring day."

Student Comments

Environmental Education Institute - June 11-30, 1973

IV. Suggest changes or additions you would recommend to improve an effort of this kind when offered another year (e. g. securing women to appear in appropriate programs, how to interest more women students in attending, etc.)

"December 15 meeting is not good time for most of us. It is not enough time to have used the curriculum guides even once from September to December; need full school year to use them in our courses."

"Have educators, sociologists, social change specialists assist with planning and conduct of Institute.
Have minority leaders present environmental concerns from their point of view.
Make sure that presentation is made concerning problems of environment of crowded urban areas with low average income."

"Take the field trips in the afternoon and do the concept ideas in the morning."

"Field trip to paper industry."

"Film bibliography."

"Program was good."

"Housewives."

"Obtain possible speakers from different environmental groups."

"Leave as it is - very educational."

"More speakers on the auto industry.
Lady speakers - their concepts.
Too many speakers on economics which is a poor topic related to environmental conservation."

"If speakers are unable to attend because of unforseen incidence, they should be able to send someone to the workshop that is qualified to give a similar talk. Some disappointment when the talk and subject is completely removed. Dr. Tews tried to cover all areas, however."

"Perhaps a more direct effort could be made to encourage each school to send one person from each discipline, so that each course of study would be represented. This would better insure that environmental concepts would be written for and applied in other than the science, agricultural and technological fields."

"With respect to securing women to appear on programs: "Yes! Yes! I love the men, but feel it would be more realistic if women were involved as speakers and maybe as participants, although the participation is less difficult to encourage."

"Fine as it is."

"Encouragement of more elementary teachers by sending out of individual bulletins of course program to teachers in public school systems."

"Evaluation sheet like this should be given at the start of the course as it is hard to remember three weeks later."

"More field trips if possible."

"Get people who can answer technical questions, and who can relate the economic ramifications of alternatives."

"Many people commented that environmental problems are more social than science-oriented, yet this area of representatives, educators, etc. was poorly represented in frequency when compared to biologists, geologists, limnologists, etc."

"Need more variety for first day. A large number of students were ready to quit after this Institute's first day."

"Work on guidelines in morning when most of us are more mentally alert and refreshed than in afternoon on the days when a field trip is scheduled."

"You should get some women to appear, such as Mrs. Johnson. I feel this program should be run every year."

"Invite the Home Economics teachers from high schools."

"It was most beneficial and helpful in making me aware of the problems of ecology. I will try to pass on the information through in-service program at our school. Thank you for this opportunity. I am grateful to have been a part of it."

"Have more people from commerce and industries."

"More variety of assignments and projects besides the guidelines, e. g. develop teaching units or materials(e. g. simulations, games, etc.)
Student presentations prepared in advance."

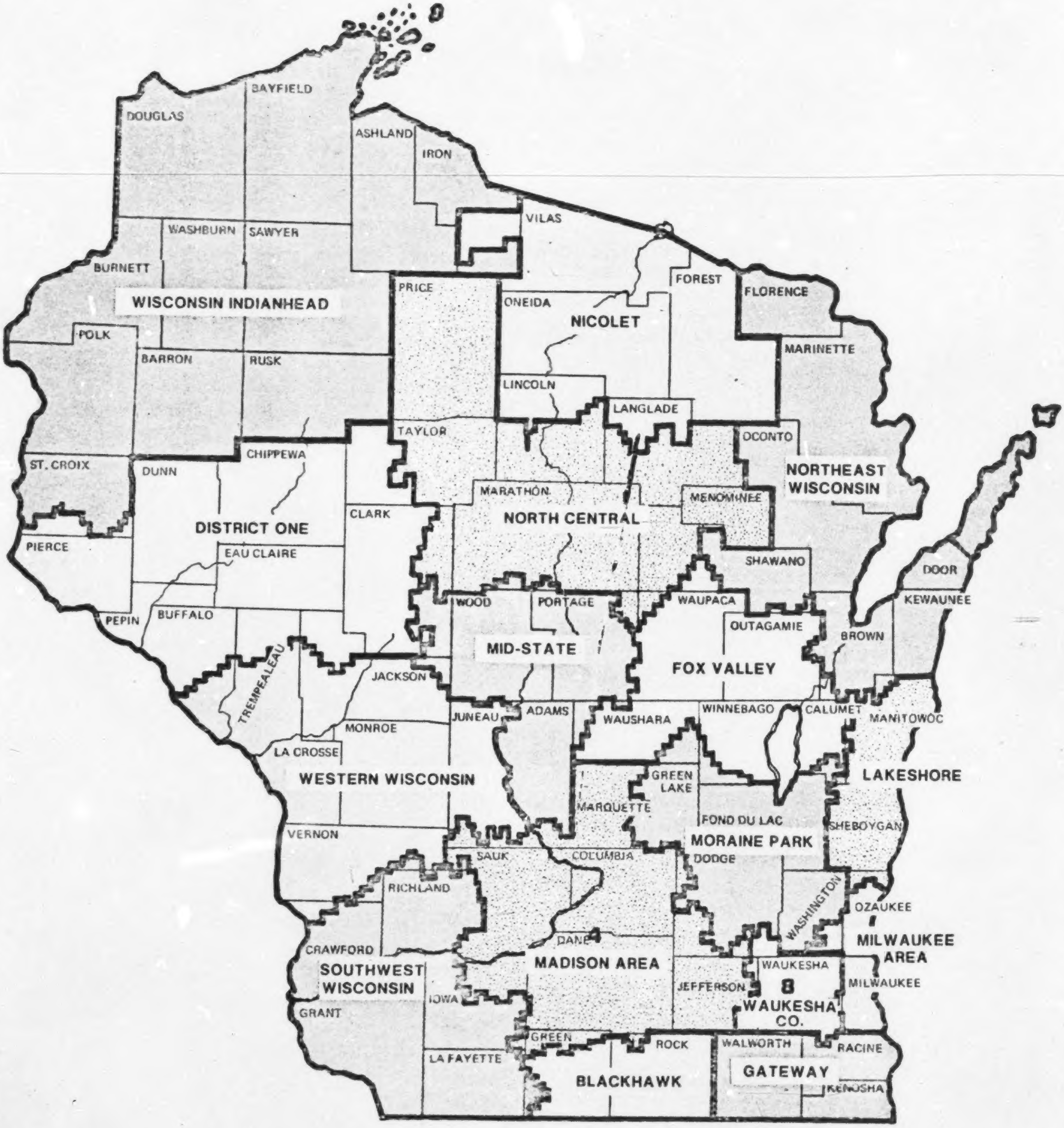
"Social worker from one of the larger cities on population problems and control or lack of it.
Advertise it more in secondary schools rather than just vocational schools."

Changing some of the speakers.
Generally thought it was an excellent program. Thank you."

"We women like to be the minority!
Excellent program - some speakers better than others.
Could cut down to two weeks if took out four speakers.
Field trips good."

APPENDIX K

WISCONSIN VOCATIONAL, TECHNICAL AND ADULT EDUCATION DISTRICTS


BAYFIELD
DOUGLAS
ASHLAND
IRON
VILAS
WASHBURN
SAWYER
BURNETT
WISCONSIN INDIANHEAD
PRICE
ONEIDA
NICOLET
FOREST
FLORENCE
POLK
BARRON
RUSK
MARINETTE
LINCOLN
LANGLADE
TAYLOR
OCONTO
ST. CROIX
DUNN
CHIPPEWA
NORTHEAST WISCONSIN
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EAU CLAIRE
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WAUSHARA
WINNEBAGO
CALUMET
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MONROE
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GREEN LAKE
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OZAUKEE
CRAWFORD
DANE
MILWAUKEE AREA
SOUTHWEST WISCONSIN
MADISON AREA
WAUKESHA
JEFFERSON
8
WAUKESHA CO.
MILWAUKEE
IOWA
GRANT
GREEN
ROCK
WALWORTH
RACINE
LA FAYETTE
BLACKHAWK
GATEWAY
KENOSHA

Approved for Operation July 1, 1972

APPENDIX L

Three-Week Institute

Environmental Education

June 11 - 29

at the

University of Wisconsin Center-Fond du Lac

THREE CREDITS

(Undergraduate or Graduate Levels)

SPONSORING AGENCIES:

U.S.Office of Education
Environmental Education Act, 1970

Wisconsin Board of Vocational,
Technical and Adult Education

University of Wisconsin - Oshkosh

University of Wisconsin Center -
Fond du Lac

Moraine Park Technical Institute -
Fond du Lac

For Further Information, Call or Write:

Moraine Park
Technical Institute

(414) 922 8611

PURPOSE

- Study of environment and its implications in educational programs in all Vocational, Technical and Adult Education Districts in Wisconsin.
- Development of guidelines to integrate the environmental concept into vocational technical curricula.
- Participation in evaluation of curriculum development at end of first semester, 1973-74.

COURSE OF STUDY

Three weeks course
(June 11-29, 1973)

No registration or enrolling fees.

Limited enrollment.

Three credits, graduate or undergraduate.

Reimbursement - travel, meals, lodging.

Classroom activity - tours, observation, field trips, work sessions.

INSTRUCTIONAL STAFF

University of Wisconsin - Oshkosh faculty.

Consultants and specialists associated with environment.

MORAINE PARK TECHNICAL INSTITUTE
District Office
235 North National Avenue
Fond du Lac, Wisconsin 54935

11-72

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CURRICULUM DEVELOPMENT WORKSHOP IN ENVIRONMENTAL EDUCATION

A three-week institute in environmental education will be offered at the University of Wisconsin - Fond du Lac Center, June 11-29, 1973. A learning-concepts curriculum developed during the course will be included in the program offerings of the VTAE Districts, beginning with the fall semester of 1973-74. Instructional staffing will be provided by the University of Wisconsin-Oshkosh. Approximately one-half of the teaching time will be on a classroom basis and supplemented by observations, tours, and field trips. Experts in the fields associated with environment are scheduled for special presentations. The remainder of the class time allotment will be used in developing environmental concept guidelines for incorporation into District curricula.

Three credits, undergraduate or graduate, will be granted upon successful completion of the course. Participants will be reimbursed actual expenses for food and lodging to a maximum of $75.00 per week. Mileage for daily travel will be paid in lieu of lodging for participants within commuting distance. Travel at district rate or common carrier cost will be paid for one round trip per week from the participants home to the University of Wisconsin center - Fond du Lac.

An enrollment of fifty-one students will be selected from faculty members presently teaching full time in vocational-technical systems of Wisconsin.

One of the major results of this institute will be the development of a "Guide for Integrating Environmental Education Concepts." These concepts, when completed, will be the basis for integration into instructional programs of all vocational districts. Upon the conclusion of the first semester in 1973-74, all participants in the institute will convene to evaluate the guidelines based on classroom experiences.

Three credits will be granted by the University of Wisconsin - Oshkosh on either the undergraduate or graduate levels. Enrollment will be made in one of these classifications:

1. Undergraduate Special - baccalaureate degree not required for enrollment.
2. Graduate Special - baccalaureate degree prerequisite; acceptance into graduate program not necessary.
3. Graduate Guest Matriculant - for those enrolled in another graduate school.
4. Graduate Degree Candidate - must be enrolled in University of Wisconsin — Oshkosh graduate school.

Please send preregistration and enrollment forms for Environmental Education Institute to:

Name ______________________ Social Security No. ______________

School Address ______________________ School Phone ________ Home Phone ________

City ______________ State ______________ Zip Code ______________

Degrees Held ______________ Institutions: ______________________

Subject or Administrative Area ______________________

Type of registration preferred:

☐ Undergraduate Special ☐ Graduate Special ☐ Graduate Guest Matriculant ☐ Graduate Degree Candidate

Purpose of participation in this class ______________________

____

____

Return this form to:
Moraine Park Technical Institute - District Office
235 North National Avenue
Fond du Lac, WI 54935

____
Signature